VOLUME XXV

NUMBER THREE

THE NATIONAL GEOGRAPHIC MAGAZINE

MARCH, 1914

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21 Pages of 4-Color Work

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Encouraging Birds Around the Home
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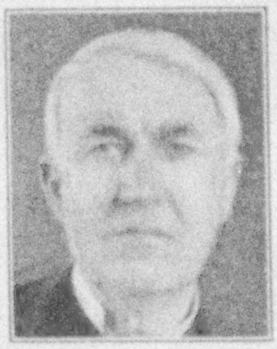
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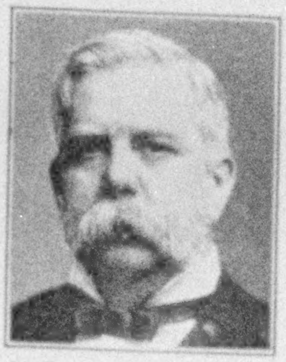

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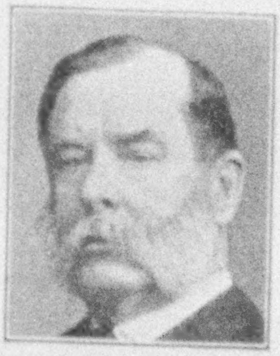

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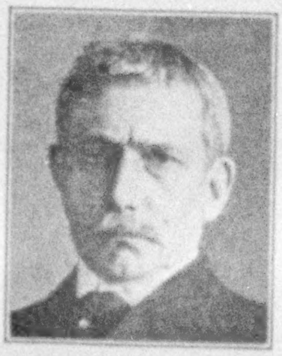

A Great Senator

ON BEING "ALERT"

TO be "*alert*" of mind does not mean that one must jump to a conclusion, but that when a conclusion has been formed, one must be in readiness to give instant effect to it. The word, indeed, comes from the old Italian "*all' erta!*"—"*Go to the watch-tower!*", the warning which, in the eventful Middle Ages, sent lookouts to their post to see when rapid action would be necessary.

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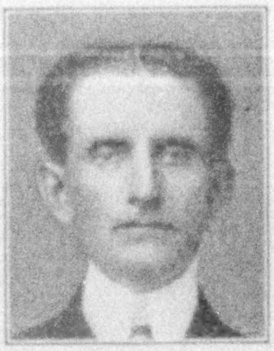
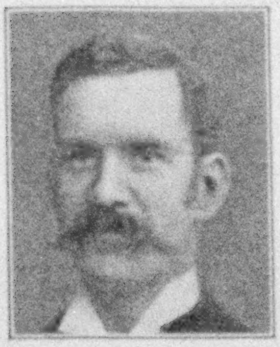


A Farm Laborer

A Civil Service Clerk

A Fireman



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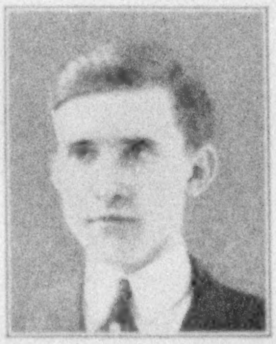

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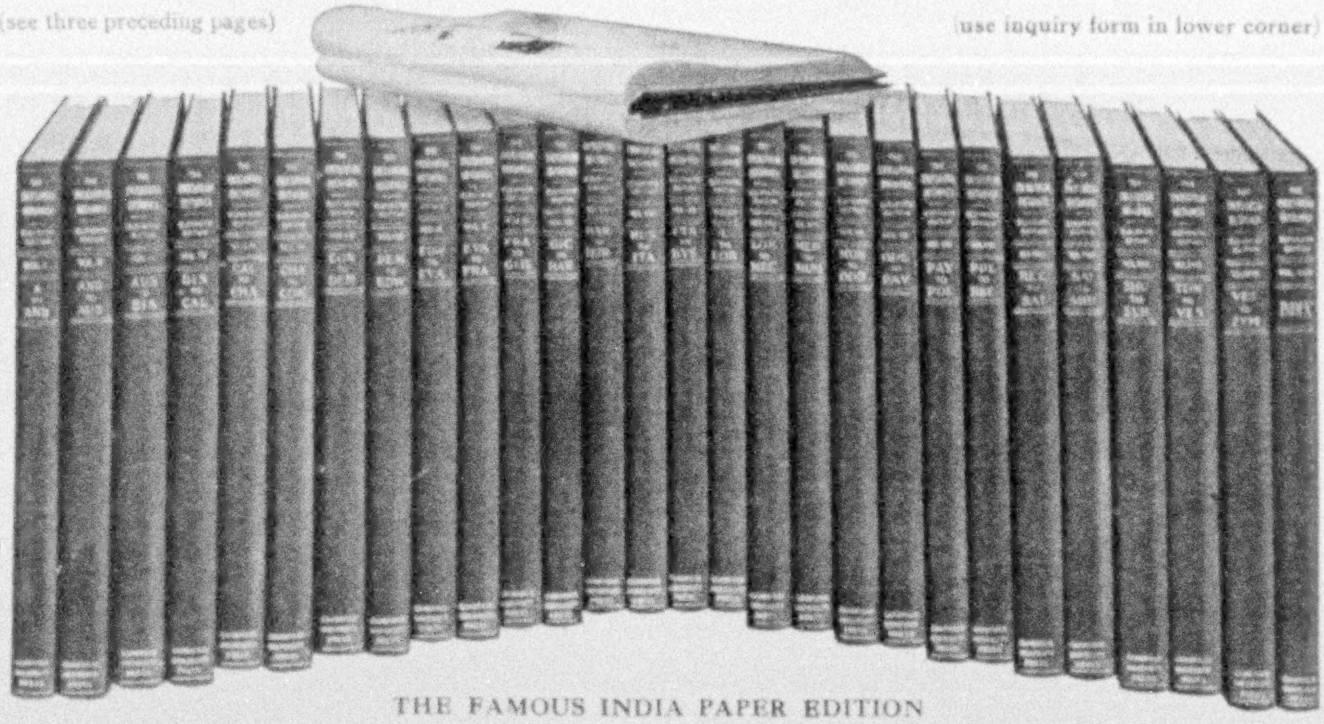

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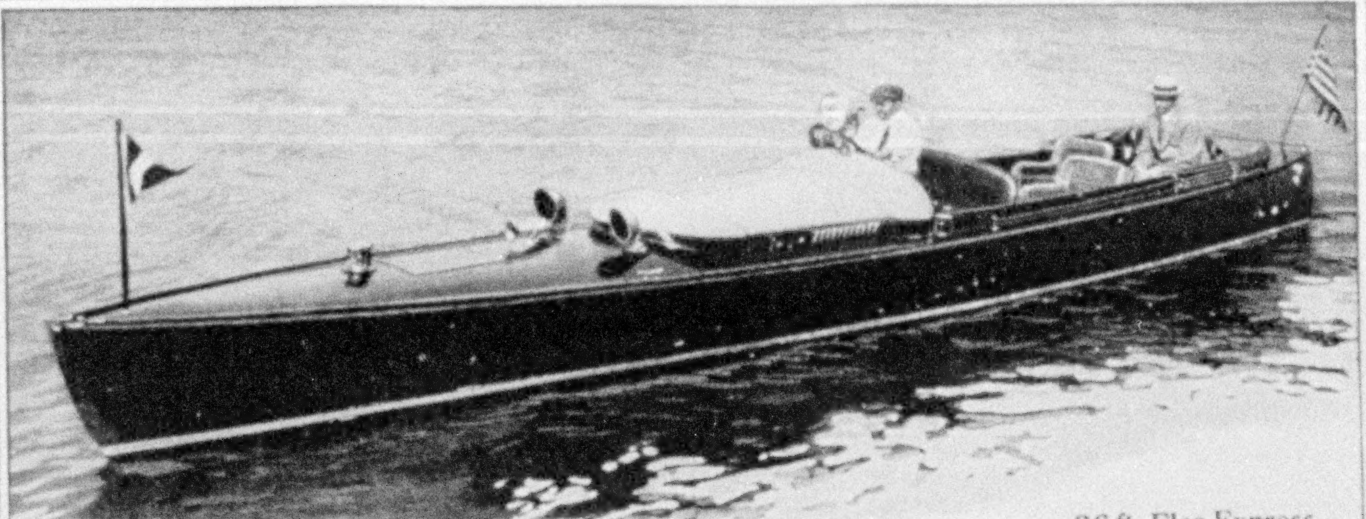

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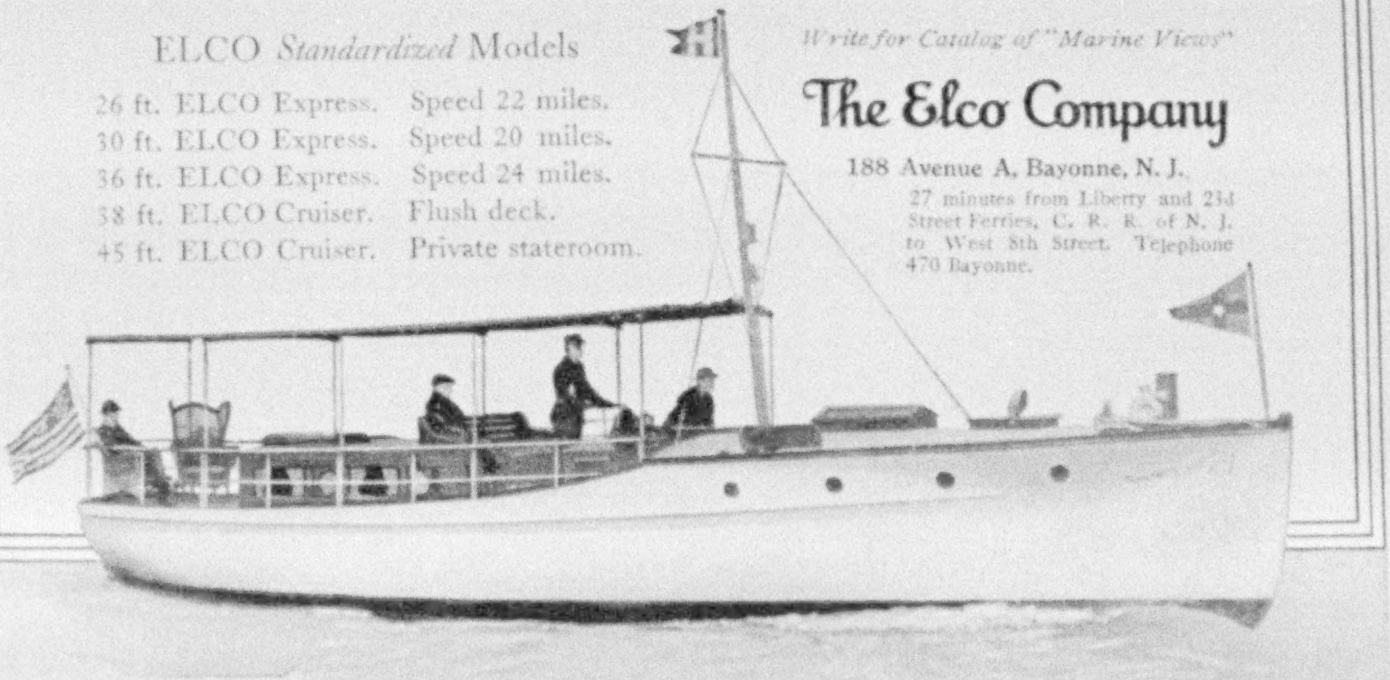

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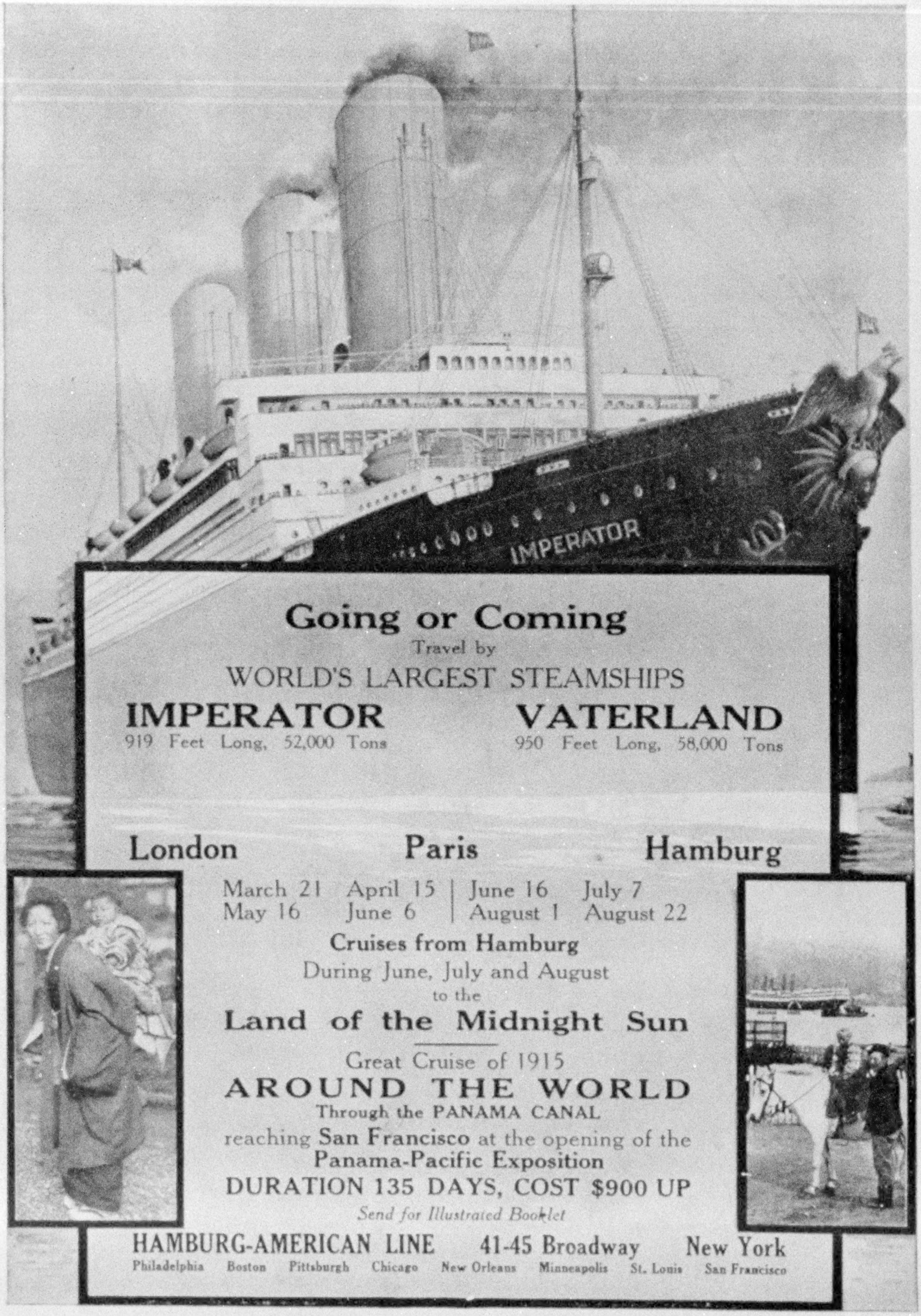

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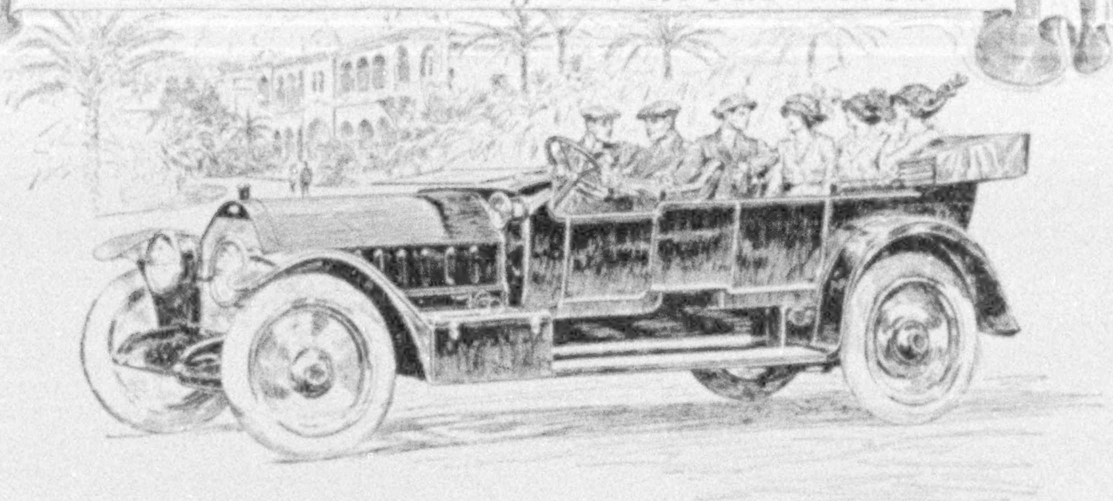

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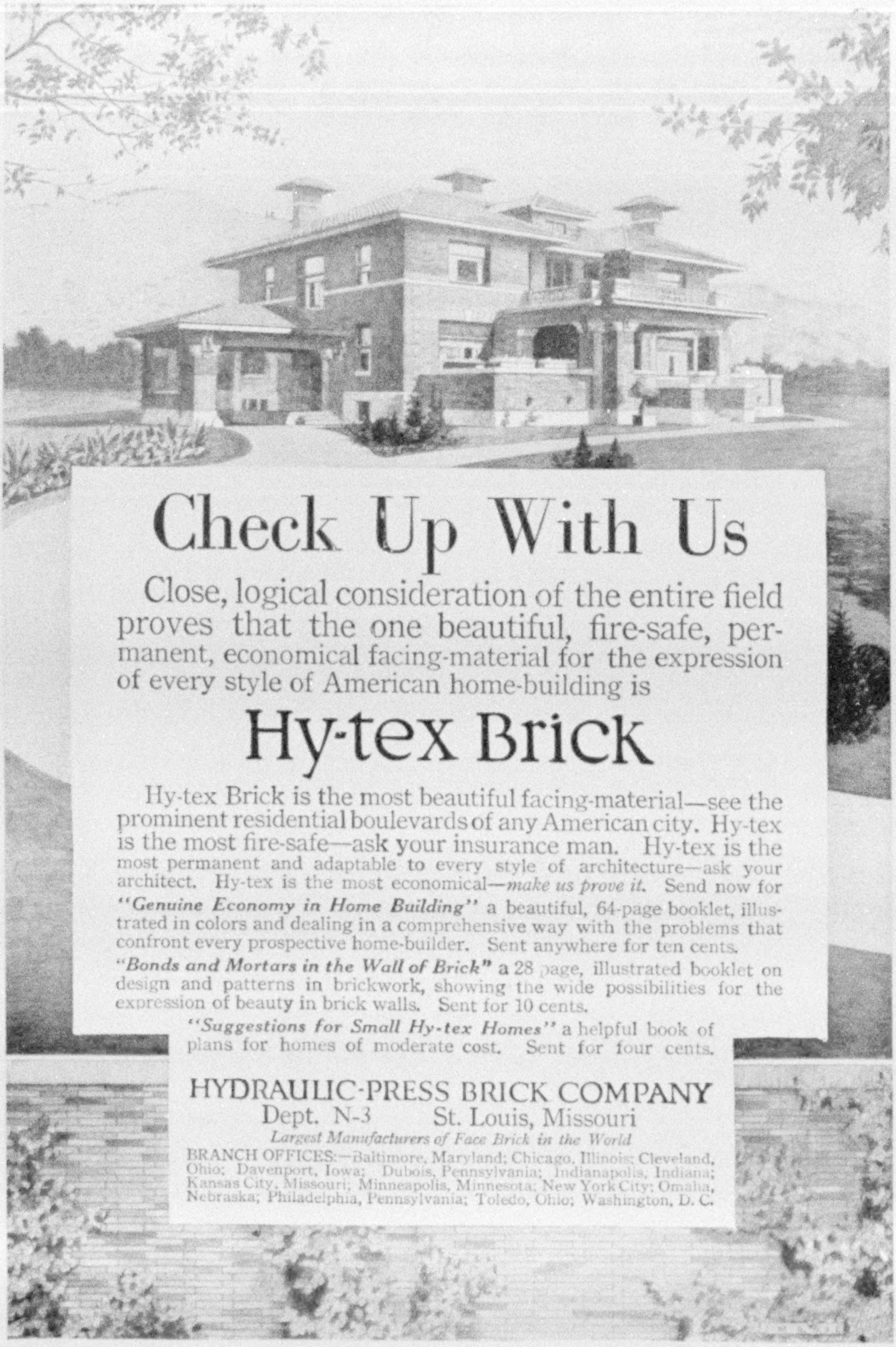

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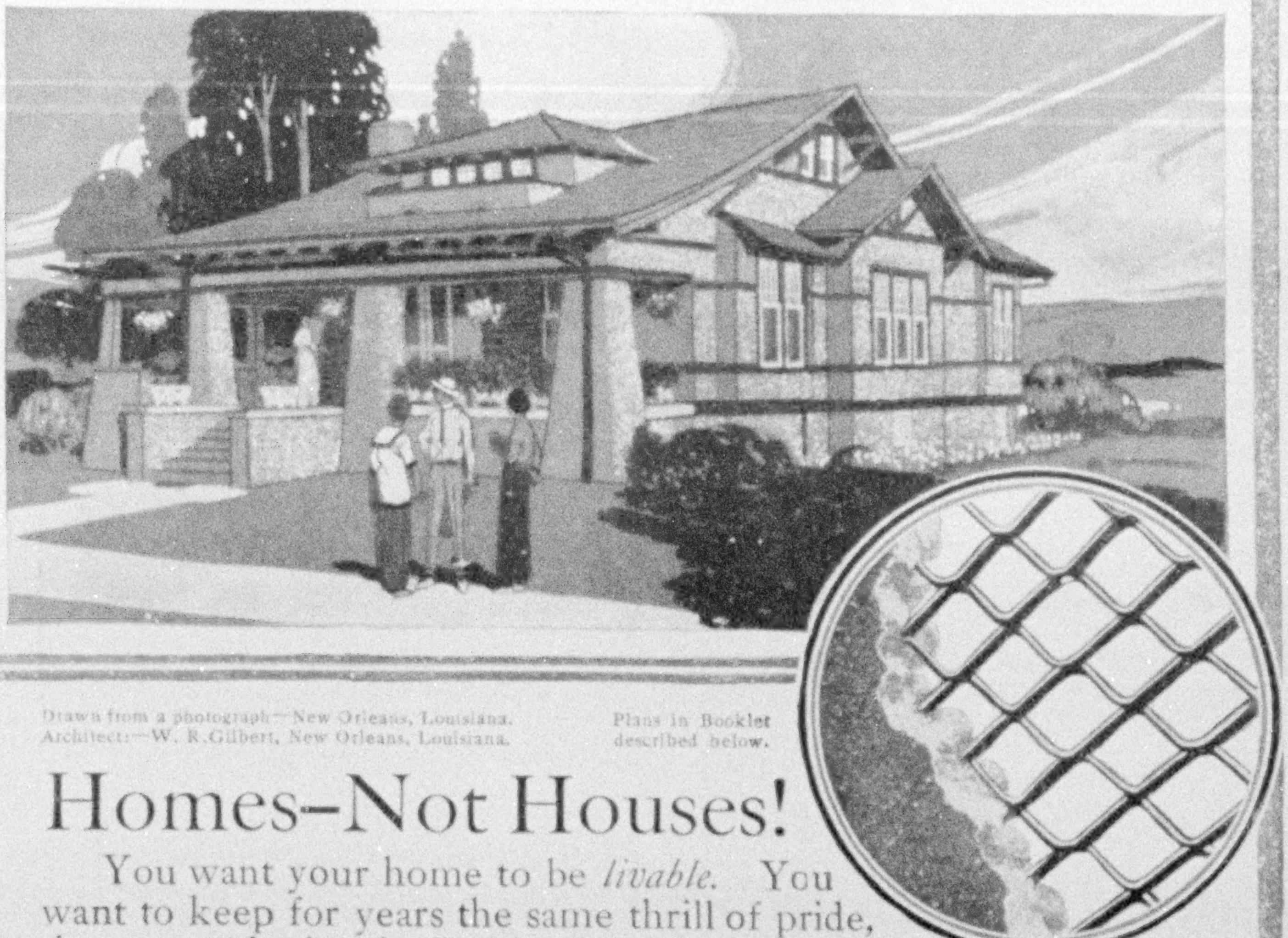

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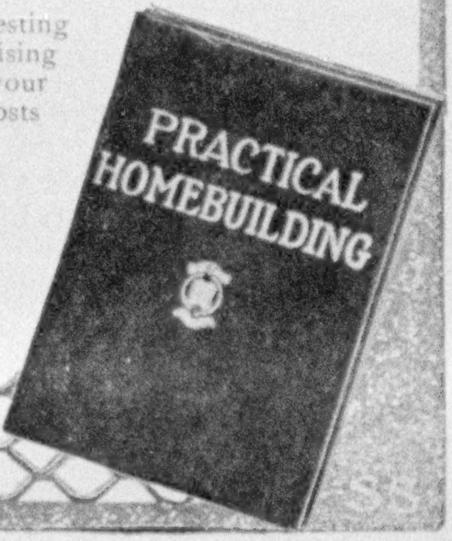

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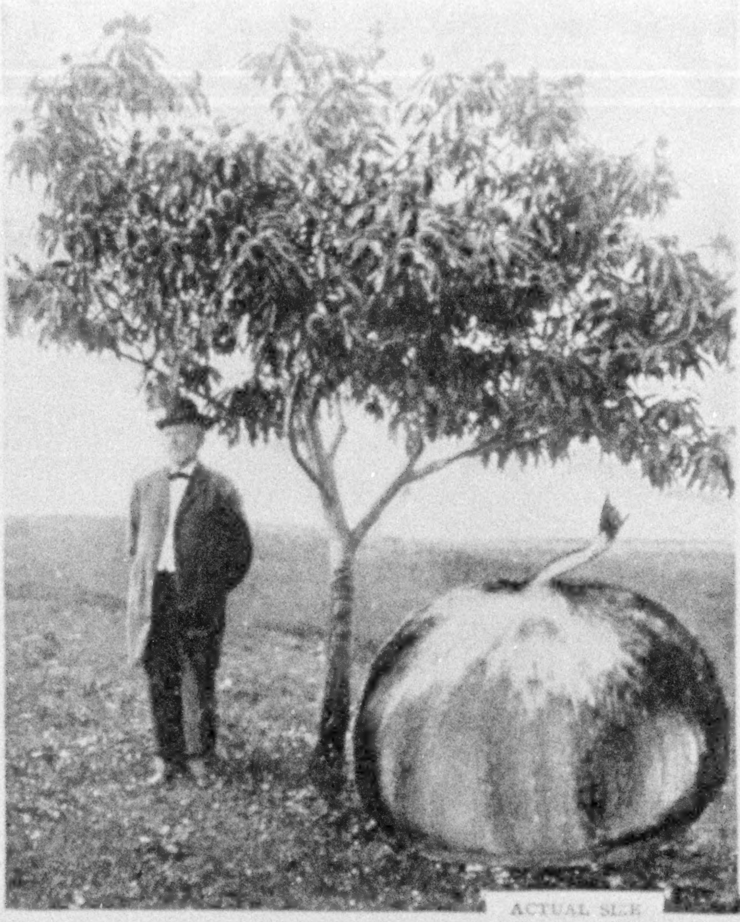
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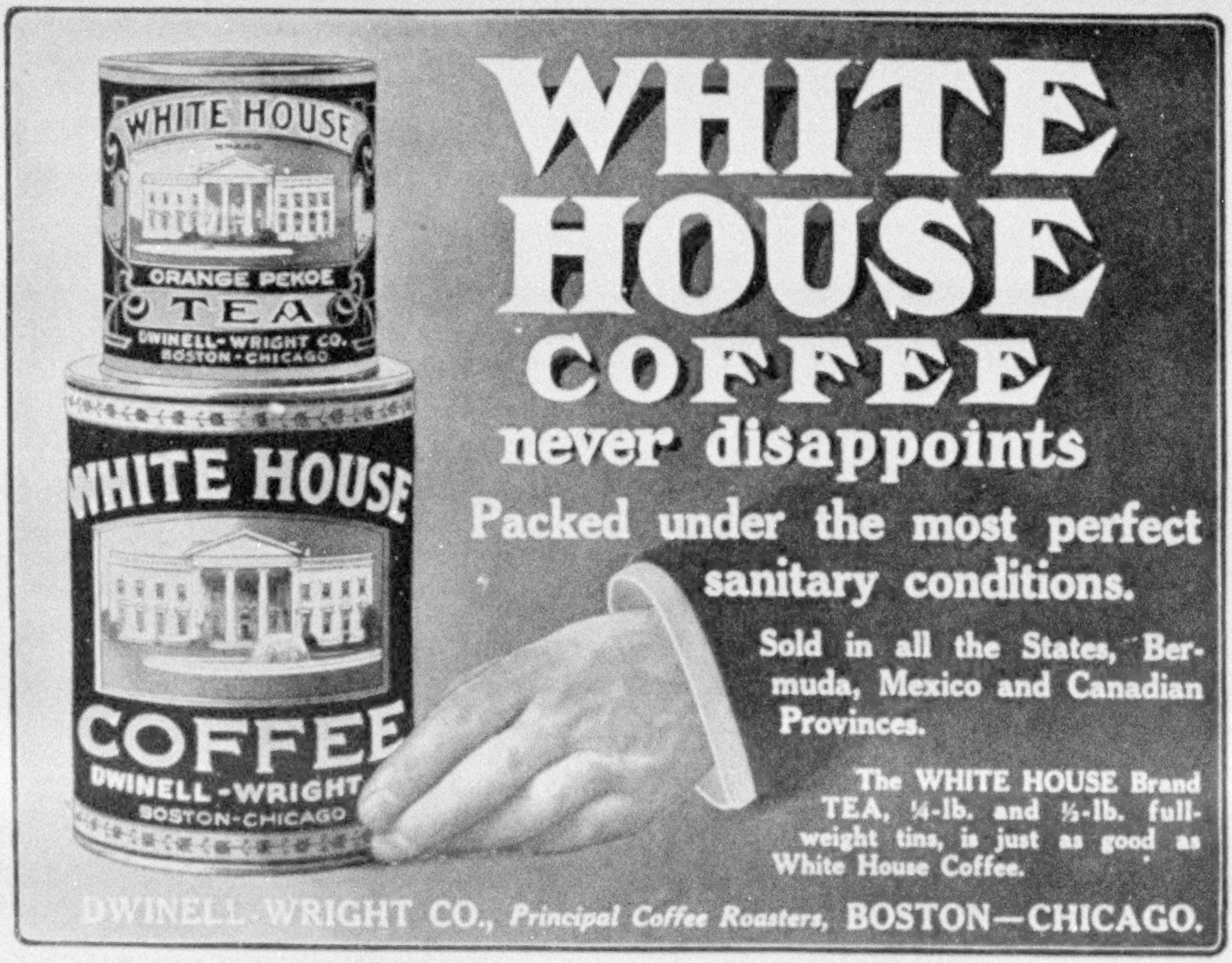

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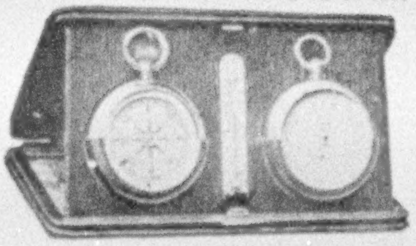

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City of Washburn, Wis., Optional Funding	5%	Nov. 1, 1925	4.75%
Dawson Co., Mont., Sch. Dist. No. 1, 10-20 Yr.	5%	July 1, 1933	4.50%
Stillwater Co., Mont., 10-20 Yr. Funding.	6%	Nov. 1, 1933	4.85%
Musselshell Co., Mont., Sch. Dist. No. 6, 15-20 Yr.	6%	Sept. 1, 1933	5.25%
Custer Co., Mont., Sch. Dist. No. 57, 6-10 Yr.	6%	Sept. 1, 1923	5.25%

These securities were bought after careful personal investigation in a territory with which we are thoroughly familar through many years' experience. The approving opinion of a well-known Municipal Bond attorney will be furnished with each issue. Special descriptive circular on any of these bonds will be sent on request.

Write for general Municipal Bond circular "NM"

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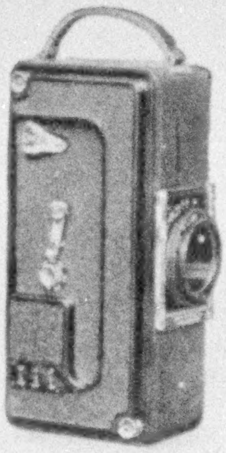

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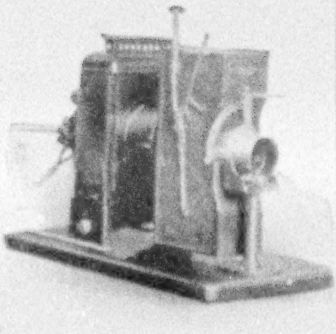

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Less Price—Less Weight—Less Fuel Cost Than Fours

This new car—the HUDSON Six-40—brings out many innovations.

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It has made possible for the first time an economical Six—far more economical than Fours.

This new HUDSON Six-40 weighs 2,980 pounds. That's 400 pounds less than last year's HUDSON "37." It consumes one-fourth less fuel. Yet the HUDSON "37" was a four-cylinder car, shorter, less roomy, less powerful.

Compared with other Fours in this class the difference is greater. Some same-class Fours weigh 40 per cent more and consume one-third more fuel.

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SIXES

Six-40—$1750

Six-54—$2250

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Price, $1750

And this HUDSON Six-40—a quality Six—far undersells any Four in its class. So a man who now buys this class car pays more for a Four and more for its upkeep than this HUDSON Six-40 costs.

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The Six is smooth-running. It has overlapping strokes. It is flexible, economical of tires. Riding in a HUDSON Six is much like constant coasting.

Men who find this out will not buy Fours at anywhere near this price.

A New Body Type—New Features

The design and equipment are almost the same as the new HUDSON Six-54. And that is considered the handsomest car of the year—a really distinguished car.

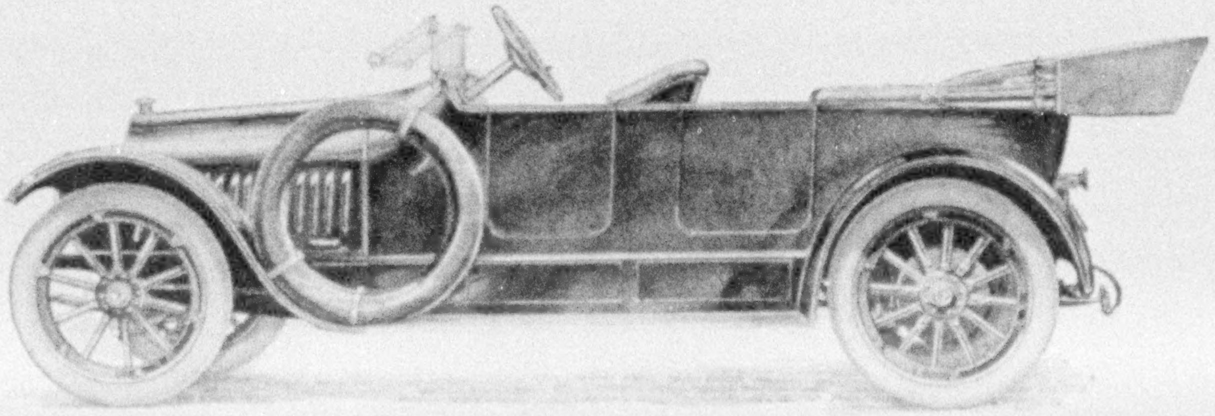
An ideal streamline body of the coming type. Hand-buffed leather upholstering. It has the convenient new "One-Man" top with quick-adjusting curtains attached.

Two disappearing tonneau seats. Gasoline tank in the dash. Extra tires ahead of the front door. Concealed hinges, concealed speedometer gear. Dimming searchlights, the Delco patent system of electric starter and lights.

Six months ago there was no car at any price which offered so many attractions.

This new Six-40 is today the most interesting car on the market. The demand for it is breaking all HUDSON records. You may, when you see it, want an early delivery. So we urge that you go and see it now.

54 of the 79 Automobile exhibitors at the 14th National Automobile Show held in New York Jan. 3 to 10 this year, displayed six-cylinder cars. Eighteen showed Sixes exclusively. That emphasizes the dominance of Sixes.



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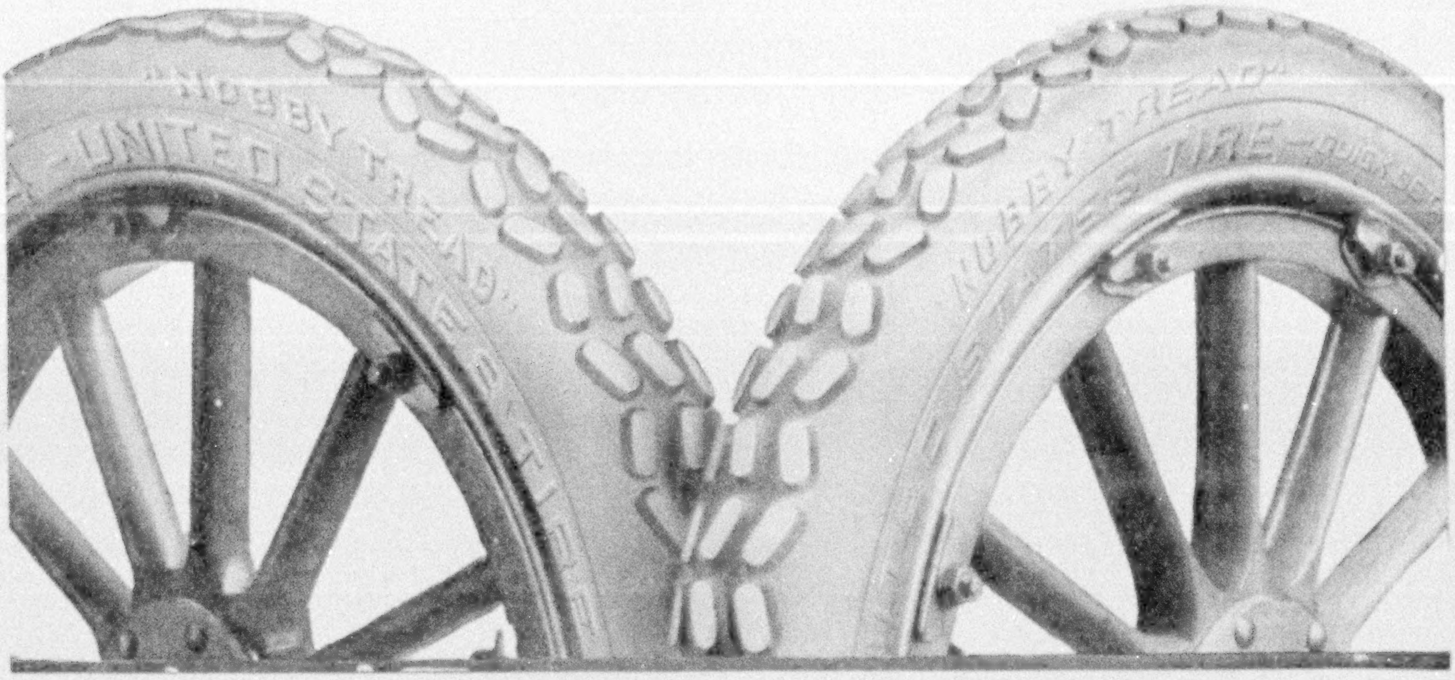

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Are now sold under our regular warranty—perfect workmanship and material—BUT any adjustment will be on a basis of

5,000 Miles

This applies also to all ''Nobby Tread'' Tires now in service on automobiles.

The "Nobby Tread" Anti-skid Tire was placed upon the market in 1909—it was built regardless of price competition, and built to accomplish two purposes:

No. 1—To give American automobile owners the lowest "cost per mile" tire that could be built.

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The inherent wear-resisting quality—the quantity of rubber—the quantity of fabric—the methods of construction—*all* have been rigidly maintained in "Nobby Tread" Anti-skid Tires, and maintained regardless of cost and regardless of price competition.

The result is that—today, through sheer merit alone, "Nobby Tread" Tires are the largest selling high-grade anti-skid tires in the world.

But more than this—solely through their day in and day out mileage records, "Nobby Tread" Tires have proved that they are the most inexpensive tires in the end.

Therefore, based solely on their mileage records of over four years, ''Nobby Tread'' Tires can be, and now are, placed on this 5,000-mile basis of adjustment.

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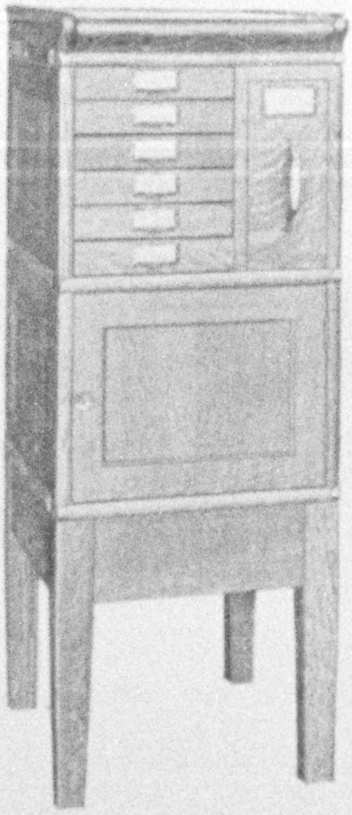
United States Tire Company

DO NOT BE TALKED INTO A SUBSTITUTE

Your own dealer or any reliable dealer can supply you with ''Nobby Tread Tires.'' If he has no stock on hand, insist that he get them for you at once—or go to another dealer.

Note This:—Dealers who sell UNITED STATES TIRES sell the best of everything.

"Mention the Geographic—It identifies you."



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Vol. XXV, No. 3 WASHINGTON March, 1914

THE NATIONAL GEOGRAPHIC MAGAZINE

VILLAGE LIFE IN THE HOLY LAND

By John D. Whiting

A description of the life of the present-day inhabitants of Palestine, showing how, in many cases, their customs are the same as in Bible times. Illustrated by photographs by the American Colony Photographers, Jerusalem.

PALESTINE, often called the Holy Land, is in a general way familiar to all of us from our study of the Bible. Few, however, realize that the manners and customs which prevailed there in Biblical days are still unchanged, even after an interval of 3,000 years. The land today is inhabited by three distinct classes: the *Bedouin*, or nomads, a wandering, war-loving race; the *Fellaheen*, who are the agriculturists, shepherds, and village dwellers, and the *Madaniyeh*, who live in the towns and cities and are artisans.

With the advent of civilization the townspeople are fast losing their ancient customs and quaint costumes, but the villagers adhere to both far more tenaciously. Still, no one knowing the country can fail to see that a time is not far distant when many of their interesting and long-lived habits of life will be things of the past.

THE VILLAGE HOME

The present-day villages are located, as a rule, either on the tops of hills, originally for protection, or near some spring or source of water. Many are built upon the foundations of dwellings whose origin dates back thousands of years. There does not exist a single example of a peasant village that has been founded in modern times.

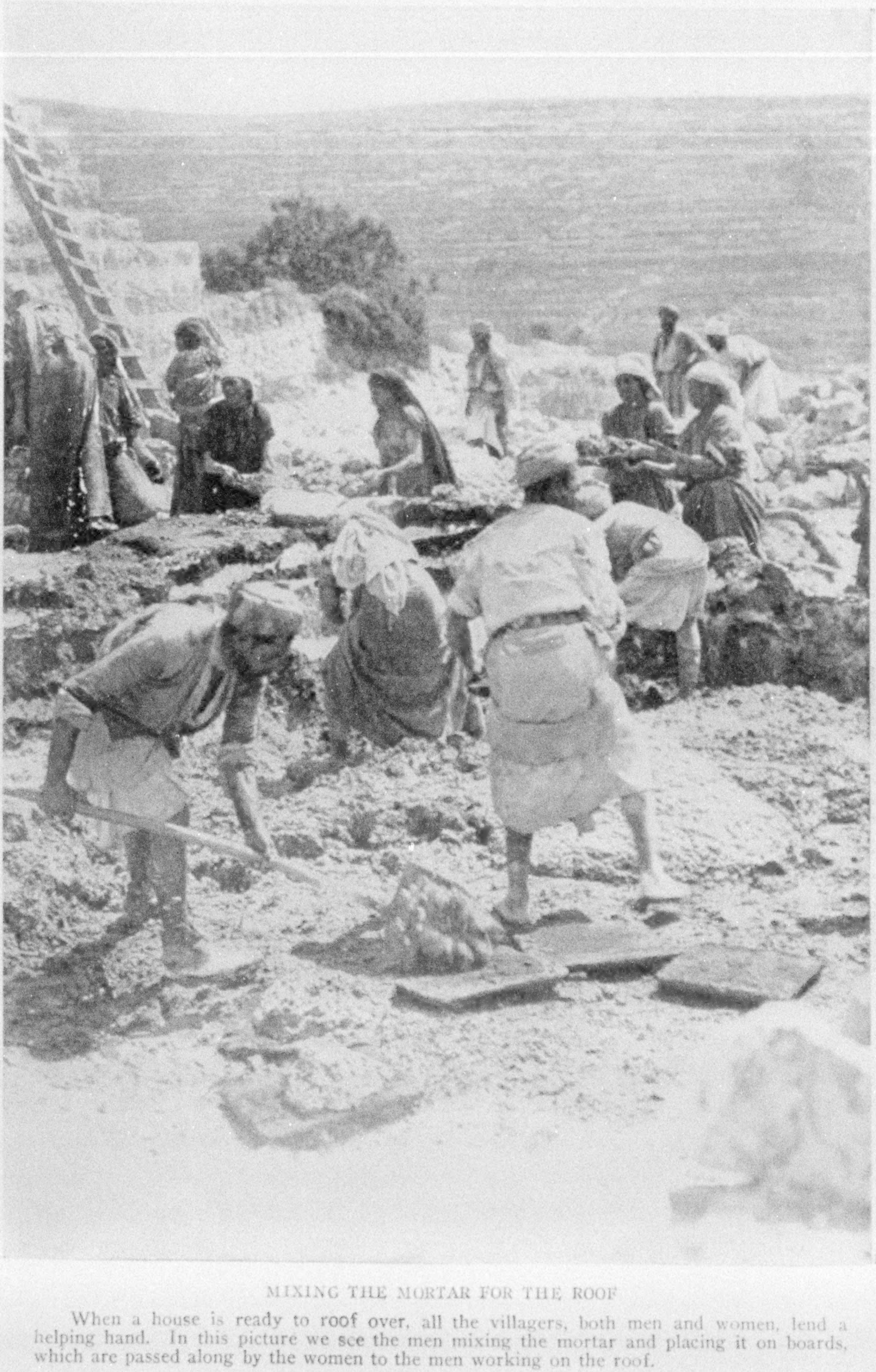
With almost every village or district there are, to a greater or lesser extent, variations in the dialect of the Arabic they speak, their style of dress, and the homes they live in.

On the Plain of Sharon, where stone is rare or non-existent, the houses are made of sun-dried brick, the roofs thatched and covered with clay to shed the rain, while in the mountains they are built of stone, since of that material there is an inexhaustible supply.

Many have pictured in their minds Mary and Joseph, after arriving at the "inn" at Bethlehem and finding no room, being forced to turn into some barn built of timber, with lofty roof, hay mows, wooden mangers, and stalls for cattle and sheep. Such a stable has been the subject of many medieval and modern artists, but it does not present a really true picture. Let us consider the old-style village home that is most common in the districts around Jerusalem and Bethlehem, for that will give us a better idea of what happened on that first Christmas day.

The village streets are crooked, narrow, and unpaved. As in many of the countries of the Orient, farmers live close together for protection, and not on their lands; therefore in the villages there are no open fields or gardens, but house is next to house, except for the small walled-

XUM



MIXING THE MORTAR FOR THE ROOF

When a house is ready to roof over, all the villagers, both men and women, lend a helping hand. In this picture we see the men mixing the mortar and placing it on boards, which are passed along by the women to the men working on the roof.

in inclosures or sheepfolds through which one generally passes when going into the dwelling.

The house itself consists of one large room, usually square. The walls, from 3 to 4 feet thick, are built of blocks of stone roughly dressed and laid in mortar, roofed over with a dome, also of stone. The outside of this roof is covered with a coating of mortar made of clay, which, on being pressed with a small stone roller or pounded with a board, becomes hard and compact enough to shed the rain (see page 252).

A steep outside staircase, unprotected by any railing, is built up to the roof, for the surface must be repaired at times. The flat, open space of the roof also forms a handy place on which to dry figs and raisins, and during the hot weather the family may sleep there at night.

THE UPPER ROOM OF THE HOUSE

Entering the door, we find that about two-thirds of the space is devoted to a raised masonry platform, some 8 to 10 feet above the ground and supported by low-domed arches. This raised space, called *el mastaby,* is the part occupied by the family, while the lower part is used for the cattle and flocks (see page 310). A few narrow stone steps lead up to the *mastaby,* and a couple of small windows pierce the wall, high up from the ground. These, as a rule, are the only means of admitting light and furnishing ventilation to the entire house. Until about half a century ago it was thought unsafe to build even medium-sized windows, and any man presuming to do so would have been considered as challenging the rest of the community.

On one side is an open fireplace, with a chimney running through the wall and terminating on the roof often in an old water jar whose bottom has been knocked out, and so becomes a sort of smokestack. Many houses have no chimney at all; small holes through the wall, or the windows, furnish the only exit for the smoke, which on winter days fairly fills the house.

The furniture is very simple and, as a rule, consists of a crudely decorated bridal chest in which the mother of the family has brought her trousseau; a straw mat or heavy woven woolen rug which covers part of the floor, and mattresses, with thick quilts and hard pillows, which at night are spread on the floor.

The cooking utensils are few in number—one clay cooking pot, a couple of large wooden bowls in which to knead the dough, and a couple of smaller ones used to eat from. Wheat is ground in a hand-mill of black basalt, the lower stone being imbedded in a sort of sun-dried clay trough shaped to receive the flour as it is ground. These, with a sieve or two, a large wooden cooking spoon, a small brass coffee-pot, a few tiny coffee-cups, and perhaps a clay dish in which to roast and grind the coffee beans, comprise the entire outfit.

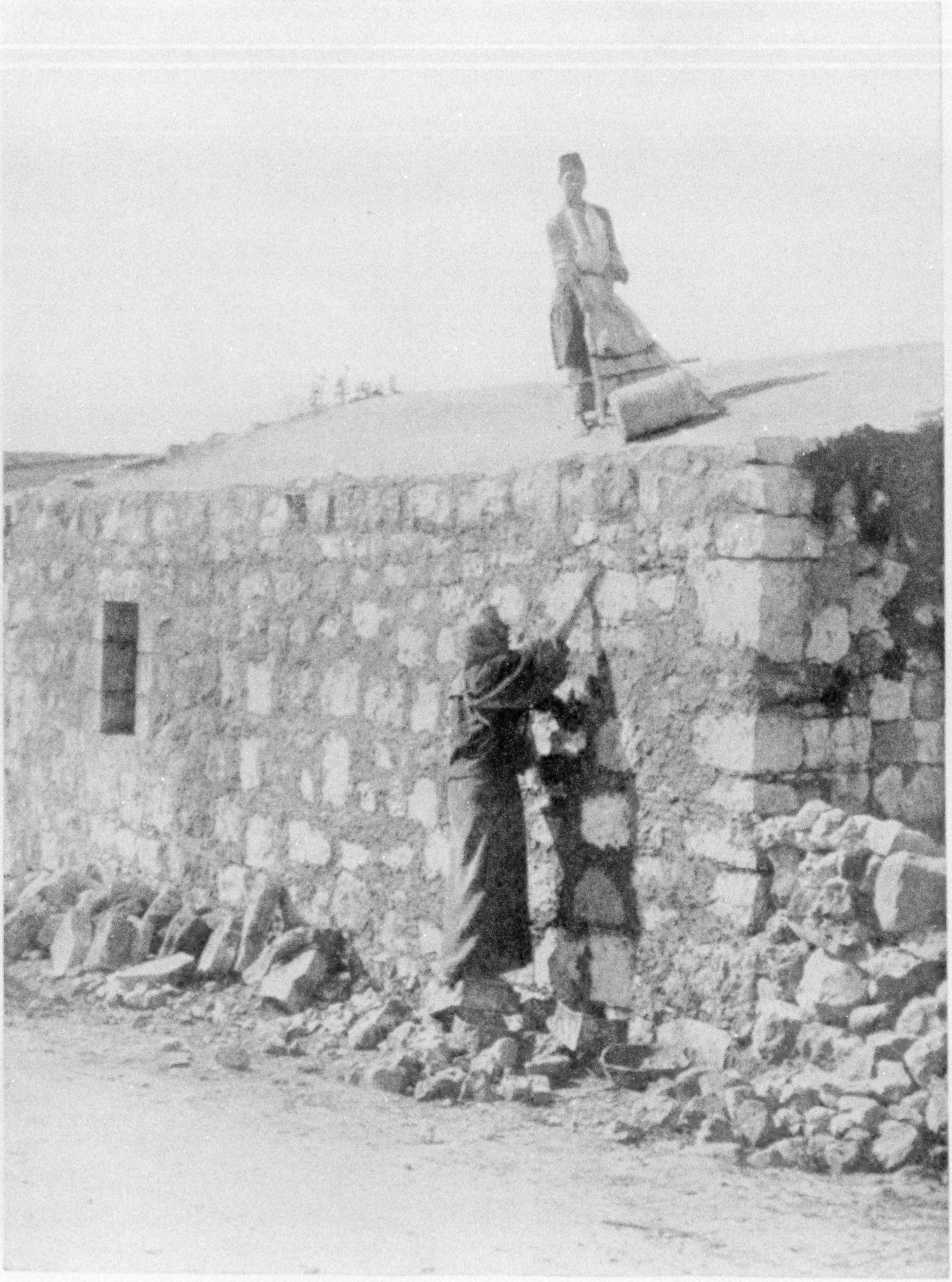
Having inspected the dwelling portion, which at once is kitchen, store-room, bedroom, and living-room, let us descend the steps into what the natives call the stable.

Below the *mastaby,* or raised platform, just described, among arches so low that a man can scarcely walk erect, are the winter quarters of the goats and sheep. To shut the flocks in, these arched entrances are obstructed with bundles of brush used as firewood for the winter. The rest of the floor space, which is open to the ceiling, is devoted to the few work cattle and perhaps a donkey or camel. Around the walls are primitive mangers for the cattle, built of rough slabs of stone placed on edge and plastered up with mortar.

Often the owner makes a small raised place on which he sleeps at night to enable him to keep better watch over the newly born lambs, lest in the crowded quarters some get crushed or trodden down by the older ones. Here he often sleeps by preference on a cold night, for he says the breath of the animals keeps him warm.

THE LAND, NOT THE PEOPLE, CONSERVES THE OLD CUSTOMS

One cannot become even tolerably acquainted with Palestine without perceiving that it is the *land* that has preserved the ancient customs. Its present-day inhabitants, who have nothing in common with the modern Jews who crowd Jerusa-



ROOFING A VILLAGE HOME

"The outside of the roof is covered with a coating of mortar made of clay, which, on being pressed with a small stone roller or pounded with a board, becomes hard and compact enough to shed the rain" (see page 251).

lem, are still perpetuating the life of Abraham and the customs and ways of the people who lived here at the time of Christ.

To know the heart of the land, to have learned the hospitality of its people, which is always offered, no matter how primitive or simple, makes it easy to picture Mary and Joseph returning from the inn, already filled with guests, and turning aside into a home such as we have described, the regular dwelling portion of which may have been none too large for the family which occupied it. It may have been crowded with other guests, but they find a welcome and a resting place for the babe in a manger.

Such a use of the *rowyeh,* or stable portion of the house, by human beings is not the exception, but an every-day occurrence. You can occasionally find men working their primitive looms there or the mother preparing the food or doing her little sewing near the door, where there is more light on a dark winter's day.

We have all perhaps noticed that in the two Gospel narratives where the birth of Jesus is dwelt upon* neither of them mentions a stable, barn, or anything equivalent, while Matthew, speaking of the wise men, says: "And when they were come into the *house,* they saw the young child with Mary his mother."

Many of these dwellings, placed as they are on ancient sites, are built over old caves or caverns which are incorporated into the lower or stable portion. Today, in Bethlehem's church, such a cave is shown as the actual birthplace of Jesus. Its walls are covered with costly tapestries and paintings, and from its ceiling hang lamps of gold and silver (see page 304).

THE GUEST-CHAMBER OF THE VILLAGE

Each village has an upper room or guest-chamber (see page 254). During the summer the shade of some large tree is often substituted for this room. However, in either case this guest-chamber or tree is the social center for all the village men, where many spend the evening or the entire day when they have nothing with which to occupy themselves. Sociability is one of their characteristics; they love to gossip and chat about the local news. Of course, not a single newspaper is to be had; so all their information is derived from those who have been last to town.

A servant is hired to attend to this guest-chamber, and every day, by turn, one of the villagers furnishes the coffee beans and sugar for the coffee to be served to the men thus congregated; he, too, supplies the food and bedding if some ordinary guests come along.

They are, of course, great respecters of persons; so that if a common man happens in, a couple of fried eggs with bread and olives will do for him. If a more important personage arrives, a pair of roast chickens is provided for his supper; but if a still more honored one, a sheik of a village, or a large company of men appear, a lamb or kid is killed, and in all cases horses are furnished with nose-bags full of barley. The supplying of these more expensive meals is apportioned among the various men by turn, while they furnish barley according to the amount of land possessed.

In the possession of the man attending the guest-chamber are three small wooden bows, on the cord of which are strung slips of paper, each bearing the name of one of the men of the village. The slip first in order indicates the name of the person whose turn next comes to serve, and in this simple way the proper accounts are kept, since one of the bows represents chickens, the next lambs and kids, while the third is for the barley. As each one fulfills his obligation the paper representing it is torn off, and when all are gone, a new set is written and the turns begin again.

Let us now watch a company of distinguished visitors arrive at the village guest-chamber.

The young men run to help the guests dismount, and, leading the animals away, tie them in the courtyard or in the stable, which is below the "upper room." Others hasten to spread rugs and mats on the floor and mattresses around the wall, furnished with cushions, for on them the guests sit cross-legged or recline. Many of the men of the village now join the

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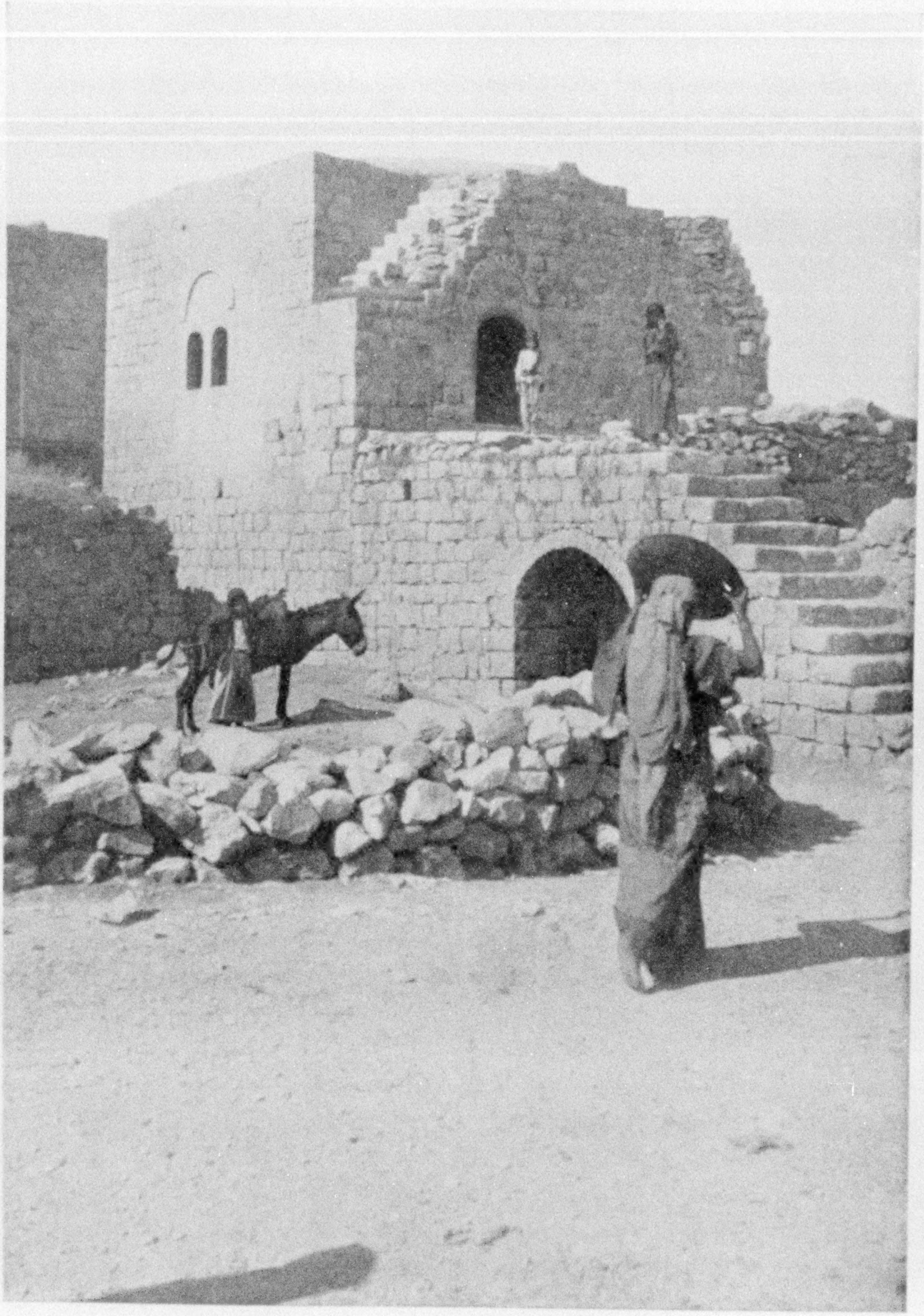
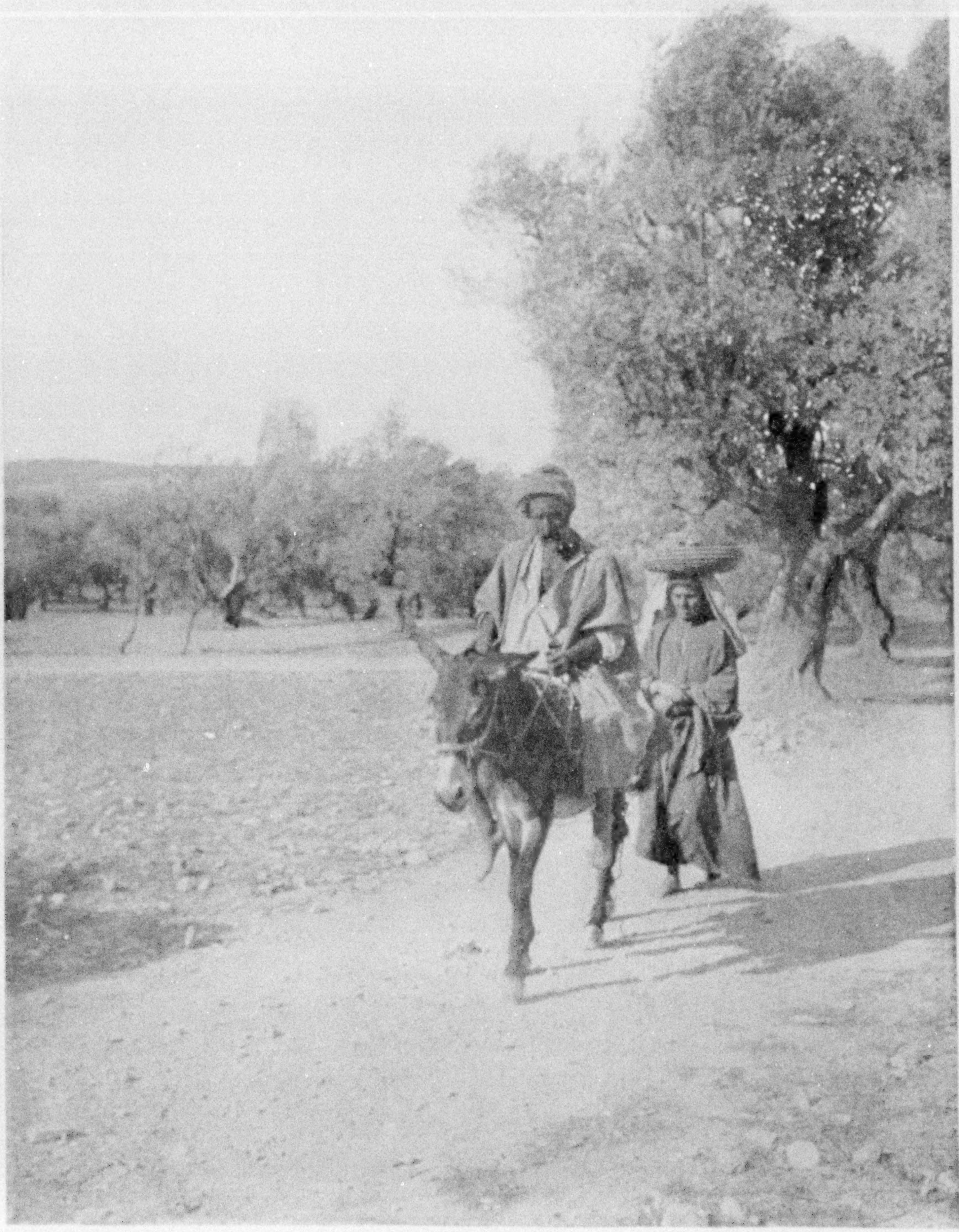
* Matt. 2: 1-12; Luke 2: 1-20.



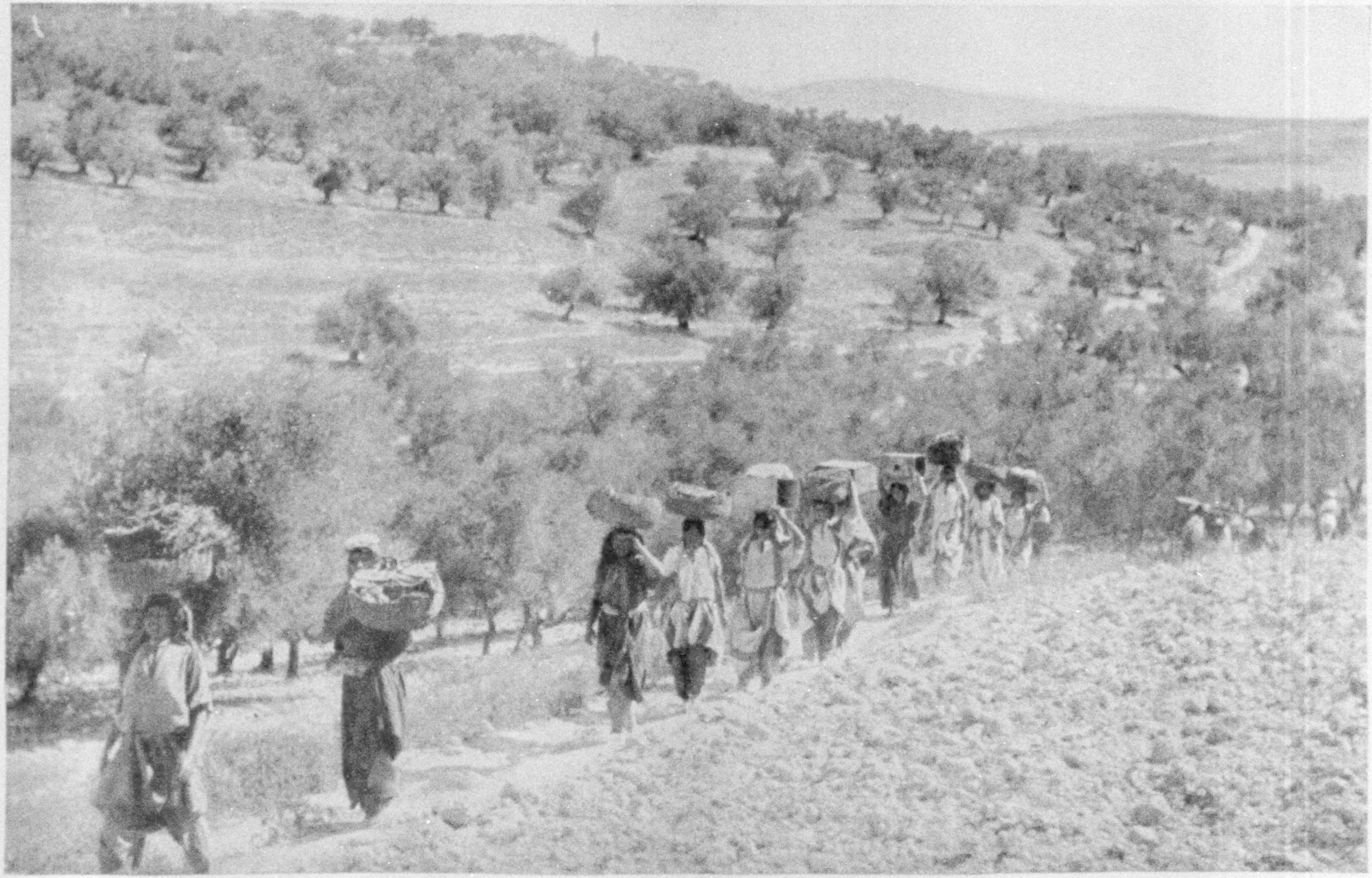
THE VILLAGE GUEST-CHAMBER

"Each village has an upper room, or guest-chamber. During the summer the villagers often substitute the shade of some large tree for this room. This guest-chamber or tree is the gathering place for all the village men, where many spend the evening or the entire day when they have nothing with which to occupy themselves, for sociability is one of their characteristics" (see page 253).



THERE ARE NO SUFFRAGETTES HERE

The proper etiquette of the Holy Land bids the wife follow meekly on foot while her husband rides majestically in front. In the good old days the gentle sex never was seen riding, but the modern spirit is creeping in, and "today it is a common sight to find a woman astride of a donkey" (see text, page 261).



WOMEN OF SAMARIA

The Samaritan woman wears the bloomers of the North under the loose long robe, or *tobe*, of the South, her costume emphasizing her geographical position. The graceful carriage of the Syrian woman is due to her custom of bearing heavy loads upon her head guests, and for a while there are long exchanges of salutations, while tiny cups of coffee are sipped, and the more they enjoy it, the louder they smack their lips.

Bitter coffee is generally offered and is served with only a sip at the bottom of a very small cup, while when sweet coffee is made, the cups are filled to overflowing. This, as will be readily seen, has a symbolical meaning—"May bitterness be little and sweetness abundant."

AN INGENIOUS INSULT

Traveling with a friend some years ago, we were thus entertained. Entering the guest-chamber, we noticed that the occupants were unusually quiet and that one man had no turban on. It was whispered to us that this man, who was a stranger, had been robbed the night before by one of the men of the village who had a notoriously bad reputation, even among his own people. The victim had appealed to the elders of the town. Without a word, coffee was prepared.

As we were foreigners, they made sweet coffee for us, thinking we would not like the bitter, and filled our cups full, while the bitter kind was passed to all the rest in little doles; but to the man suspected of robbery a full cup was served. This was such an insult that he flew out of the room; a fight ensued, his house was searched and the goods recovered, and the stranger again donned his headgear, which was among the things that had been stolen.

As they thus sit chatting and drinking coffee they also smoke. Each man carries a leathern pouch of tobacco from which he rolls his own cigarettes or fills a long-tubed water-pipe or nargheli.

Little preparation is made for the midday meal. Some hot bread, a plate of fried eggs, another of curdled milk, or a dish of fresh butter with a pile of fine sugar on top, suffices. This meal is for the guests alone.

A FEAST FOR THE STRANGER

The person whose turn it is to give the supper does not start preparations till the flocks come home in the evening, when a fatling is slain, cut into pieces, and boiled as a stew in a great kettle. Another large pot of rice is cooked.

All the men of the village now slowly congregate at the guest-chamber, each throwing down on the coat, spread for this purpose, a couple of thin loaves of bread that he has brought with him.

When all are assembled, the pile of bread is torn up into small pieces and placed in large wooden bowls. Over this, in each bowl, a large pile of rice is put and the meat on top, while a liberal supply of the gravy is added.

Sitting on the floor, first the guests, with the older and more important men, fall into circles around the bowls, and before partaking each one says *Bismallah* (in the name of Allah), to drive away the genii. With the aid of the thumb and first two fingers, great balls of rice and soaked bread are made, which are dexterously popped into the mouth.

The food is eaten very hot, and it is surprising how much one man can consume when at such a feast and how little it takes to sustain him ordinarily.

As each set finishes eating they wash their hands, water being poured on them by a servant, as we read of in Old Testament times.* Then they drink coffee and smoke until time to retire, when beds are spread on the floor for the guests, some of the villagers remaining with them, sleeping in their coats. The party usually leaves the village early the next morning.

The guest-chambers are not for women; so, if a man is traveling with his family, he does not go to this regular reception place, but waits about the village until some one passing invites him into his house. This happens today just as in the case of the Levite of old who was traveling with his concubine and servant from Bethlehem-judah, and was entertained at Gibeah by the old man from Mount Ephraim who found them waiting in the street of the city.†

CONCERNING FAMILY LIFE

Children in the peasant family are always welcome, girl babies sometimes excepted. The father prides himself on his boys, and even the mother prefers them, and, when questioned as to the number of her offspring, she will invariably say that she has five *children* and two girls, or as many as the case may be.

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* 2 Kings 3: 11.

† Judges 19: 15-21.

Not to have a boy is a great hardship to the family and is especially felt by the mother, for failure to have a son may become the cause of her divorce or her husband's excuse for marrying again. This feeling is hard to understand, since they look upon a girl as a profitable possession, for a would-be husband must pay a comparatively handsome price for her. The boy, on the other hand, is a greater expense, and his wife and wedding are costly affairs. The only explanation is that their great aim in life is to perpetuate the name of the father.

To be polite the *fellah,* in speaking of a pig, dog, donkey, or anything out of good taste, invariably says, *b'eed 'annak,* meaning, "Be it far from you!" So, also, when a girl or woman is spoken of, they often say, "Be it far from you!"

Although women are thus looked upon as something inferior, still when they have become well advanced in years and are perhaps the grandmothers of large families, or have signalized themselves by some special attainment, they are frequently the object of the respect and reverence of the younger women and of the men as well (see page 265).

The woman may never call her husband by his first name, but "O father of Ahmed," or whatever the eldest son's name may be, which indeed is the name by which he is generally known.

In naming the first son it is customary to give him the name of his grandfather on the father's side; therefore, even before a youth is married he will often be addressed as the father of Ali, or Mohammed, or Suleiman, as the case may be. The first daughter is usually named for the grandmother, again on the father's side.

The wife likewise takes the name of her first-born son. The husband, speaking of her, especially to men, will never say "my wife" or mention her first name, but will say either "the mother of Ahmed," or "my family," "the relative in my house," "the forbidden," or "the daughter of my uncle."

The reason for this is that a man marries his first cousin in preference to any one else, and in fact she cannot marry another if he wants her. Gauged by our conception of the subject, the women are rigorously ruled by the men; still the men feel that in these days the women are becoming too independent, as what follows will illustrate.

ESSA'S LAMENTATION

Only yesterday Essa, who tends the vineyard of a friend near the village of Sharafat, lying between Jerusalem and Bethlehem, was heard thus complaining to another:

"Oh! my master, when I was young I used to rule 'my family' with a hard heart, for her ways did not please my mother, and I used to beat her much. My father, may God have mercy upon him,* often said to me: 'My son, these are the days of women, and if you so treat your wife you will not be able to live with any woman. Their ways are perverse, but you cannot change them. The days of men are passed.'

"In former days, my master, a woman would not dare to go to her father's house or that of a neighbor for a visit without first getting her husband's consent, and much less would she think of addressing her husband before people. If he happened to be in the village guest-chamber with the men and she desired to call him, she would say to some man sitting by, 'Tell *him* to come,' and sometimes, to amuse ourselves, the man would inquire, 'Who?'; to which she would repeatedly answer only, 'he,' for modesty would prevent her mentioning his name or saying 'my husband'; but now my woman calls me 'Essa' in the midst of the village and I hold my peace.

"Women formerly, when passing men on the road, would cover their faces with their hands and keep their eyes on the ground; but now when we meet them they are not shy, so we men keep our eyes on the ground until they have passed.

"A common saying among the women used to be, 'O Preserver, protect me from my husband's displeasure!' Now

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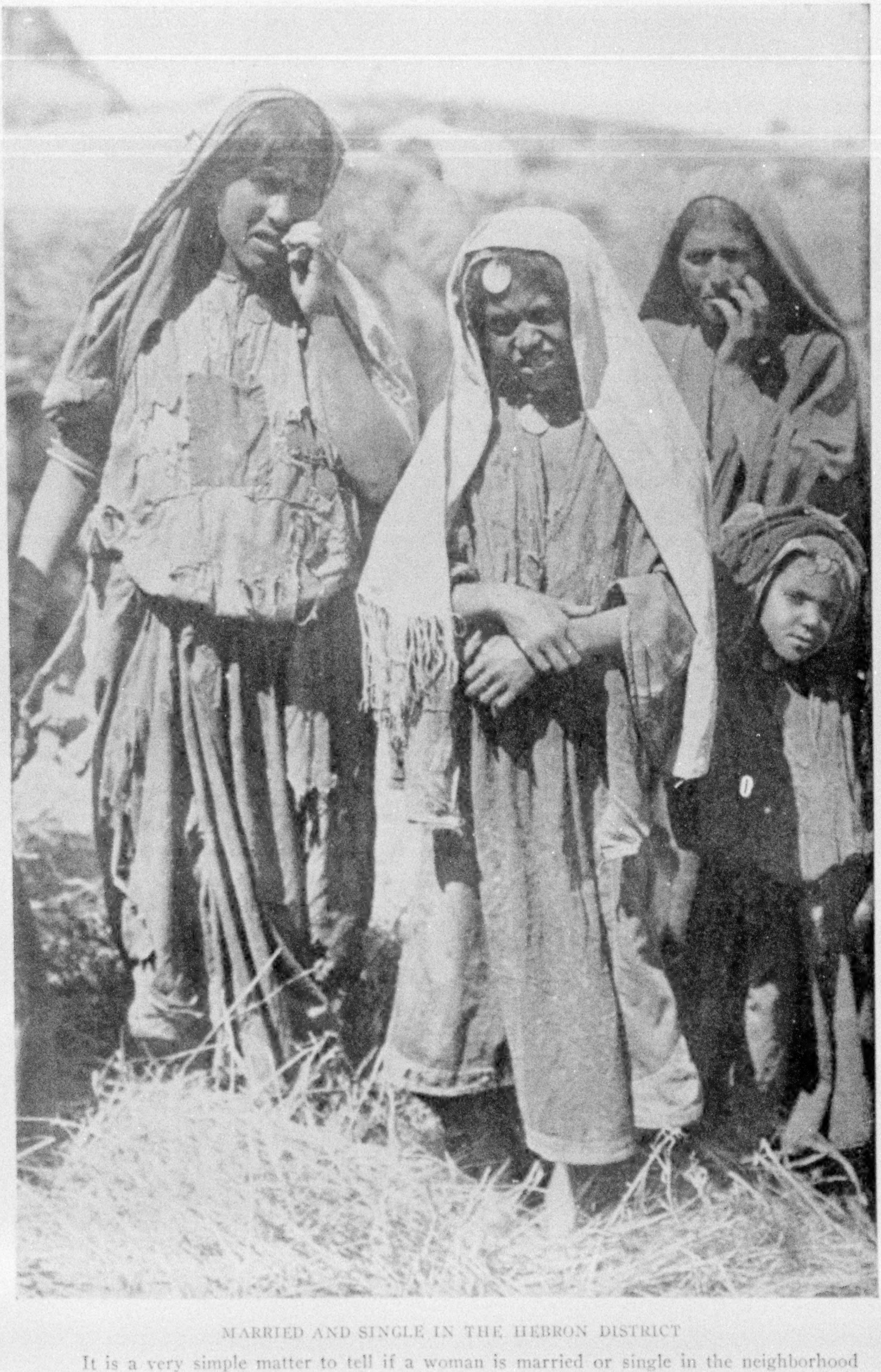
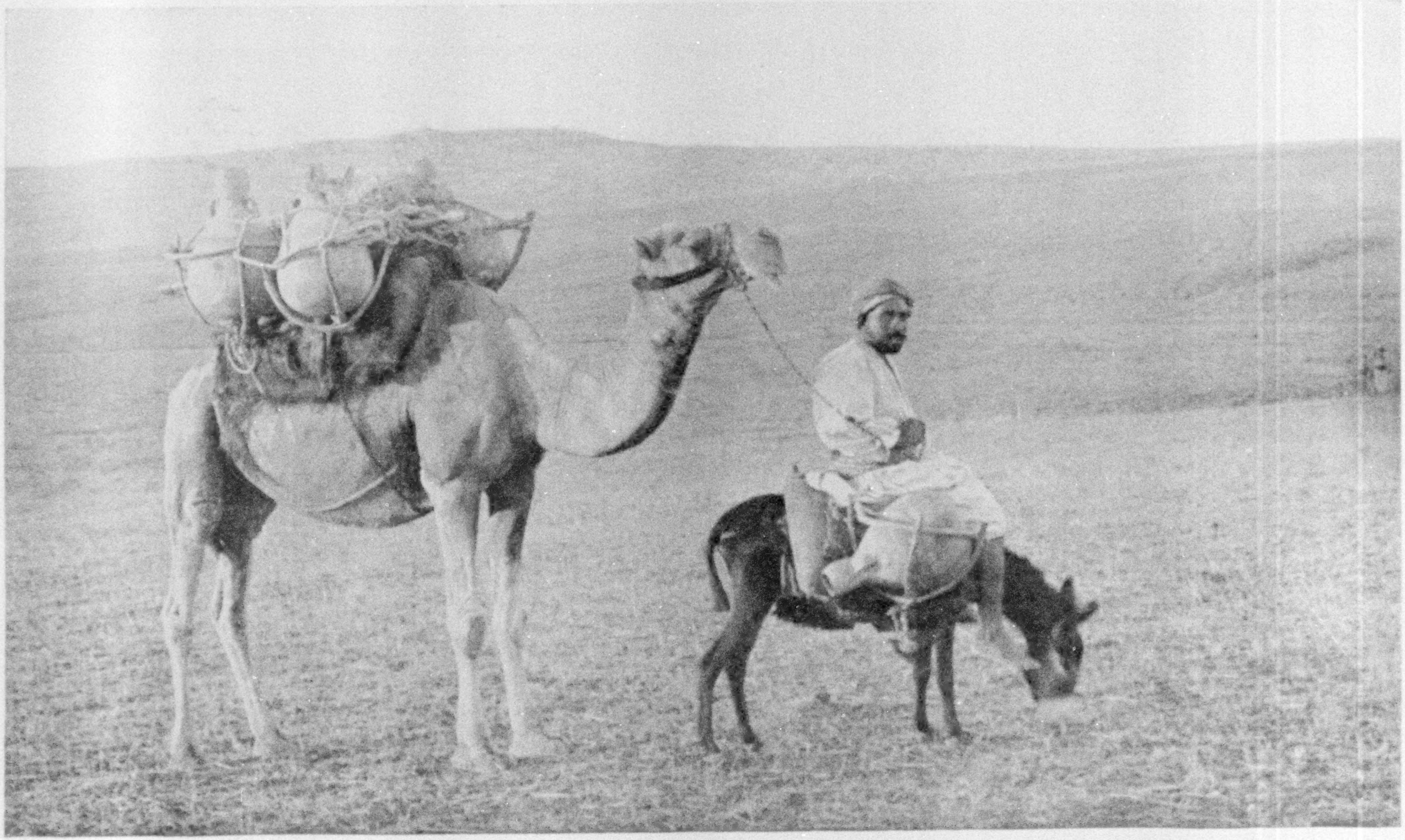
* This expression is always used when speaking of a deceased relative or friend, while when mentioning an enemy or evil person they say, "May God not have mercy upon him!"



MARRIED AND SINGLE IN THE HEBRON DISTRICT

It is a very simple matter to tell if a woman is married or single in the neighborhood of the ancient city of Hebron. All the unmarried girls wear a large silver coin on their foreheads, like the girl in the picture. When no such coin appears, it is a sign that the woman is or has been married.

XUM



AN UNUSUAL SIGHT

From time immemorial the task of furnishing the village with water has fallen to the lot of the women, who can be seen morning and evening returning from the stream or well with their water-pots on their heads. In exceptional instances the men bring the water on the backs of donkeys and camels, as shown in the picture.

it is reversed and we men say, 'O Preserver, protect me from my wife's displeasure!' Women never in former times were seen riding, but today it is a common sight to find a woman astride of a donkey, and the other day I met one so mounted, and she was even singing aloud *until she caught sight of me*."

THE BIRTH OF THE BABY

When the *fellah* or peasant child is born, its tender skin, without being washed, is rubbed with olive oil and salt. For seven consecutive days it is re-oiled, and when a week old gets its first bath and is again oiled, and each week until it is forty days old the bath is repeated. In some localities they consider it unsafe to bathe it before it is forty days old.

Into the little eyes they put drops of liquid tar, and when two days old begin the periodical application of *kohl*. This is a dye used to blacken the eyelids of not only babies, but of women and sometimes also men, and is considered both beautifying and beneficial to the eyesight. They believe the tar to be a preventive of weak eyes, and that a child who has not been salted will develop into a weakling.

How old a custom this salting is can be seen from Ezekiel's reproachful words to Jerusalem: "And as for thy nativity, in the day thou wast born . . . thou wast not salted at all, nor swaddled at all." *

Swaddling clothes like those of Bible times† are still in use. A small shirt is the only real garment put on, around which may be wrapped some old rags, care being taken to keep the arms tightly pressed against the sides.

A cap, perhaps decorated with a blue bead or some charm to keep off spirits and the evil eye, completes the apparel (see page 314).

When one looks at a child, before admiring it or speaking of it, in order to avert a calamity, one must say *Bismallah* (in the name of Allah), or "May Allah encircle you!" or "May the evil eye be frustrated!"

Mortality among the babies is great and is not to be wondered at, for in view of the rough treatment they receive, it becomes a question of the survival of the fittest.

HOW THE BABY IS CARRIED

In the Judean mountain districts a cradle is often kept for the baby while at home, and a sort of small hammock is used to carry the child around in when out-of-doors. The mother when going to work in the fields will be found with this hammock, called *hiddil* in Arabic, on her back suspended by a rope which passes across her forehead, often with nothing indicating that life is in it except an occasional squeal from one end.

It is a common sight when passing through the bazars to find a baby in this sling hung on a small nail or on the lock or bolt of a turned-back shop door, while the mother sits in the street behind the basket of produce she is selling, seemingly unmindful of her child's hazardous position.

When in the fields she erects a tripod of sticks, from which she suspends the hammock, and she protects it from the rays of the sun by covering it with one of her garments.

In the Samaria district and along the plain of Sharon a crudely decorated wooden cradle is the fashion and is carried by the mother on her head wherever she goes.

We cannot refrain from narrating a story heard from an eyewitness.

THE GENII CAPTURE A BABY. A TRUE STORY

A woman of Abou Shoushey,‡ waking up late one morning and picking up the cradle in haste, started off for the harvest fields.

She had no more than entered the narrow path between the stretches of standing grain when she felt her babe leap from the cradle on her head and heard it glide rapidly through the wheat.

Terror-stricken and trembling, she screamed for help, calling to the men to pursue the genii that had taken her babe.

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* Ezekiel 16:4.

† Luke 2:7.

‡ Abou Shoushey is ancient Gezer, which was given by Pharaoh as a dowry to his daughter when she married King Solomon.

After a heated chase some returned to inquire further particulars of her.

Unable to get a reply, for she still stood screaming, "The genii have taken my boy!" they lowered the cradle from her head and found the child still sound asleep.

The others soon returned to say they had overtaken the supposed enemy, only to find that it was her domestic cat, which had jumped from its hiding place near the baby.

HE HAD THREE DAUGHTERS BUT NO CHILDREN

Essa met us at the gate one evening and his face showed that something out of the ordinary had occurred. After the usual salutations he said, "I come to you for the reward of good news."

"And what is it?"

"My *family* gave birth to a baby."

"*Imbarak*" (May it be a blessing!); to which came his reply, "*Imbarak feek*" (A blessing by your presence!).

"What is it, Essa?" He hung his head and replied, "Be it far from you, a girl."

"How many children does this make?" he was asked. Essa looked embarrassed, and said, "I have no children; this is my third girl. When I went into the village this morning both women and men said to me, '*Imbarak*, Essa! May it be granted that she die!' but I replied, 'May Allah not listen to you!' for I have become like you foreigners and I am satisfied, although I had taken upon me certain vows in case it was a boy."

THE COSTUMES OF THE WOMEN

The costumes of the women differ sufficiently in each district to enable one to distinguish readily where the wearer comes from. From the variations of the headgear one can tell whether a woman be single or married; but, although differing from one another in the details, the costumes have much in common.

The dress, called a *tobe*, is like a long loose shirt, the sleeves narrow at the shoulders and widening out something like the Japanese pattern. The front and back are made each of one width of cloth, with a gore on each side to widen the skirt. A girdle either of white linen or bright striped silk is wound around the waist and the *tobe* is pulled up a little to produce a full bosom.

This *tobe*, when for common use, is of dark-blue cloth, the bosom is covered with cross-stitch embroidery and perhaps a little on the sleeves and skirt.

In the districts north of Jerusalem the *tobe* for the bride or for gala occasions is made of heavy white linen almost covered with embroidery, the prevailing colors being dark green and red with a little orange mixed in (see page 307). Around Samaria the *tobe* is made of white cotton cloth in which are woven bright strips of red, yellow, and green.

The shoes are crude affairs, the tops being of bright red or sometimes yellow sheepskin, with soles of raw cow, camel, or buffalo hide.

WEARING HER DOWRY ON HER HEAD

The headgear is of two parts: first, what we shall for convenience sake call a cap, and over it a veil. The Bethlehem women wear a high cap, in shape something like a man's *fez*, called *shatweh*, on the front of which are sewn rows of gold and silver coins.

A woman never parts with the coins from her headgear except in dire circumstances, and for her to admit that she has lost one of these is considered a great shame, for an evil meaning is put upon it. This throws a strong light upon the parable of the woman who lost one of her ten pieces of silver.*

The woman in the Gospel had not lost a piece of money merely valuable as a medium of exchange, but a part of her ornament and dowry, and had thus brought a reflection upon her character. So it was vital for her to recover it.

No wonder, then, she is pictured as lighting a candle, sweeping the house, and seeking diligently until she finds it, and then calling her friends and neighbors to rejoice with her.

THE CAPACIOUS, USEFUL VEIL

The veil is a large affair, some 6 feet long and 4 feet wide, and placed over the

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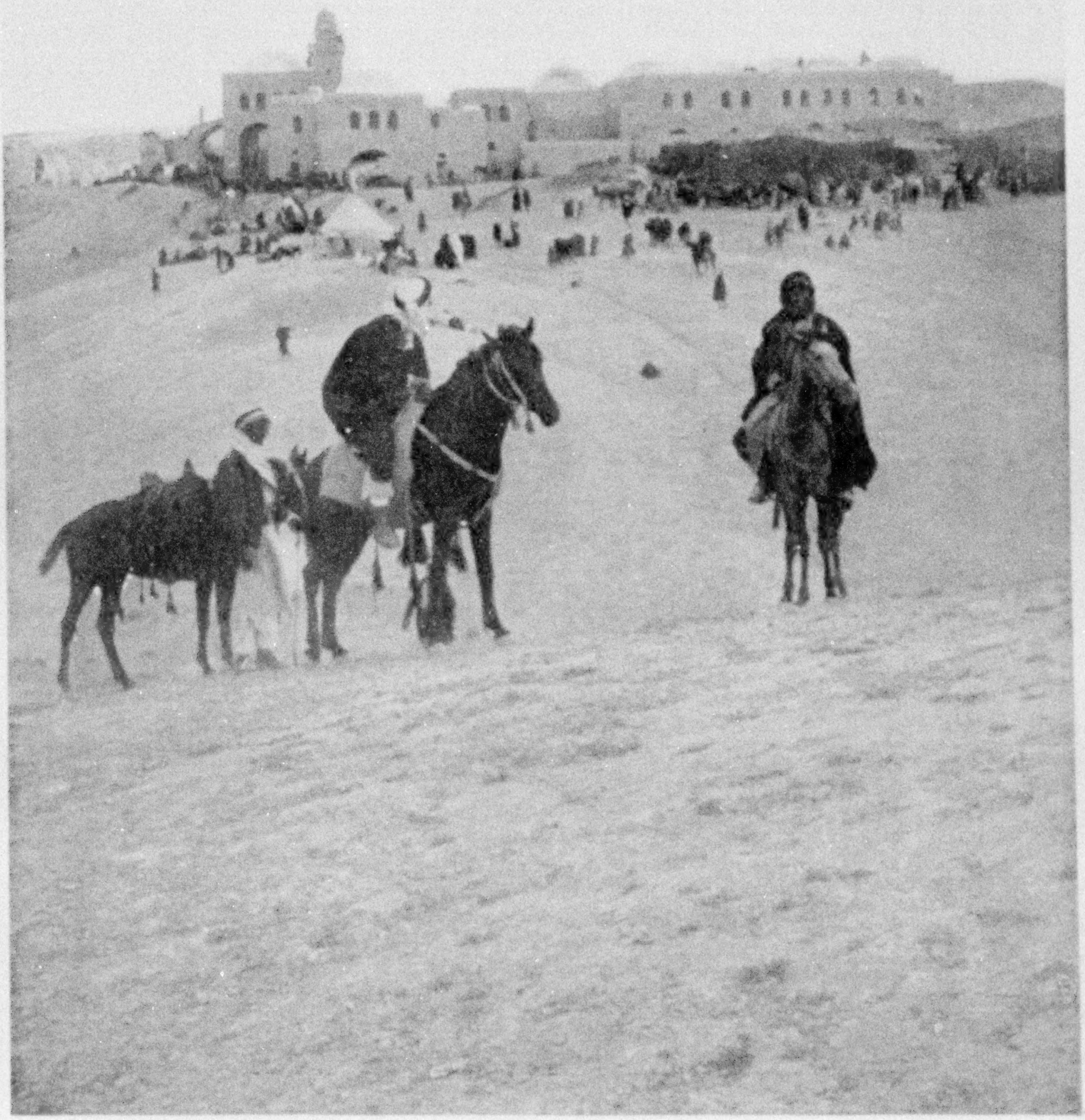
* Luke 15: 8, 9.



THE TOMB OF MOSES

This photograph shows peasants, town folk, and Bedouins assembled at the traditional site of the Tomb of Moses. Pilgrimages to this spot are quite popular, for among the Moslems the "Prophet Moses," as they call him, is held in high honor.

XUM

cap it covers the entire headgear, except the coins in front. It is considered improper for women to have their head or hair showing in public. At home they put off the veil.

Ordinary veils are made of heavy white linen, with sometimes a little embroidery, while in the districts north of Jerusalem each girl makes one almost covered with needlework, so that it will match the white embroidered *tobe* for her wedding (see page 307).

Whenever a woman lacks a basket or bag, the veil comes into use. She places what she has to carry in one end of her veil, gathers and ties it around with one corner, and places the burden on top of her head.

The story of Ruth, when Boaz says to her, "Bring the veil that thou hast upon thee, and hold it; and when she held it, he measured six measures of barley, and laid it on her: and she went into the city,"* clearly shows that this use of the veil is the survival of a very ancient practice.

Those not acquainted with this land of ancient customs may find themselves unable to understand how Ruth's veil could contain so much grain, because of their having in mind a veil of gauze and of small dimensions. The *khirka,* as the veil is called, is not only large and strong enough for this work, but such usage is very common down to the present day.

Nor is it only the veil that has survived, but the entire costume. Ezekiel the Prophet gives us a matchless description of the woman's attire of his day when, speaking allegorically of Jerusalem, he says:

"I clothed thee also with broidered work, and shod thee with badgers' skin, and I girded thee about with fine linen, and I covered thee with silk. I decked thee also with ornaments, and I put bracelets upon thy hands, and a chain on thy neck. And I put a jewel on thy forehead, and earrings in thine ears, and a beautiful crown upon thine head. Thus wast thou decked with gold and silver; and thy raiment was of fine linen, and silk, and broidered work." †

THE JEWELS OF BIBLE TIMES AND OF TODAY

Jewelry is very much prized, although it is mainly confined to heavy silver pieces.

A heavy silver chain is attached to the cap on either side and hangs down about the neck and below the chin (see page 307). A collarette made of plaited silver wire with many chains hanging from it used to be extensively worn by Bethlehem women, but is fast disappearing.

In the Hebron district the unmarried girls wear a large silver coin on their forehead (see page 259). Earrings are used and silver finger-rings, with Mecca stones or glass imitations, are much prized.

Were we living much later we would find it difficult to learn the meaning of the prophet's word, "And I put . . . a beautiful crown upon thy head." The *tasseh,* a disk of wrought silver or gold which, according to the old men, used to be so common, and was worn by the women sewed to the crowns of their caps, is today almost non-existent. They can occasionally be picked up at the silversmith's, where they have been sold for the silver that is in them, but the present writer has not seen a single one in use among the peasants.

In the Nazareth district European material is fast displacing hand-made goods. Even around Jerusalem the women are taking to shawls of foreign manufacture in place of the handsome hand-embroidered veils whose colors harmonize, which cannot be said of these shawls, with their flaming roses and pink backgrounds.

Few of these peasant women can be said to be handsome; still, they make an interesting and picturesque sight, as they walk in companies along the roads, going to town with their baskets of produce, or returning, chattering like magpies over the day's transactions.

When the road is very stony or wet, it is a common custom for them to take off their shoes to save them, placing them on top of their loaded baskets (see page 306). It takes *metaliks* (coppers) to mend shoes, but feet mend themselves.

The Bethlehem women have the repu-

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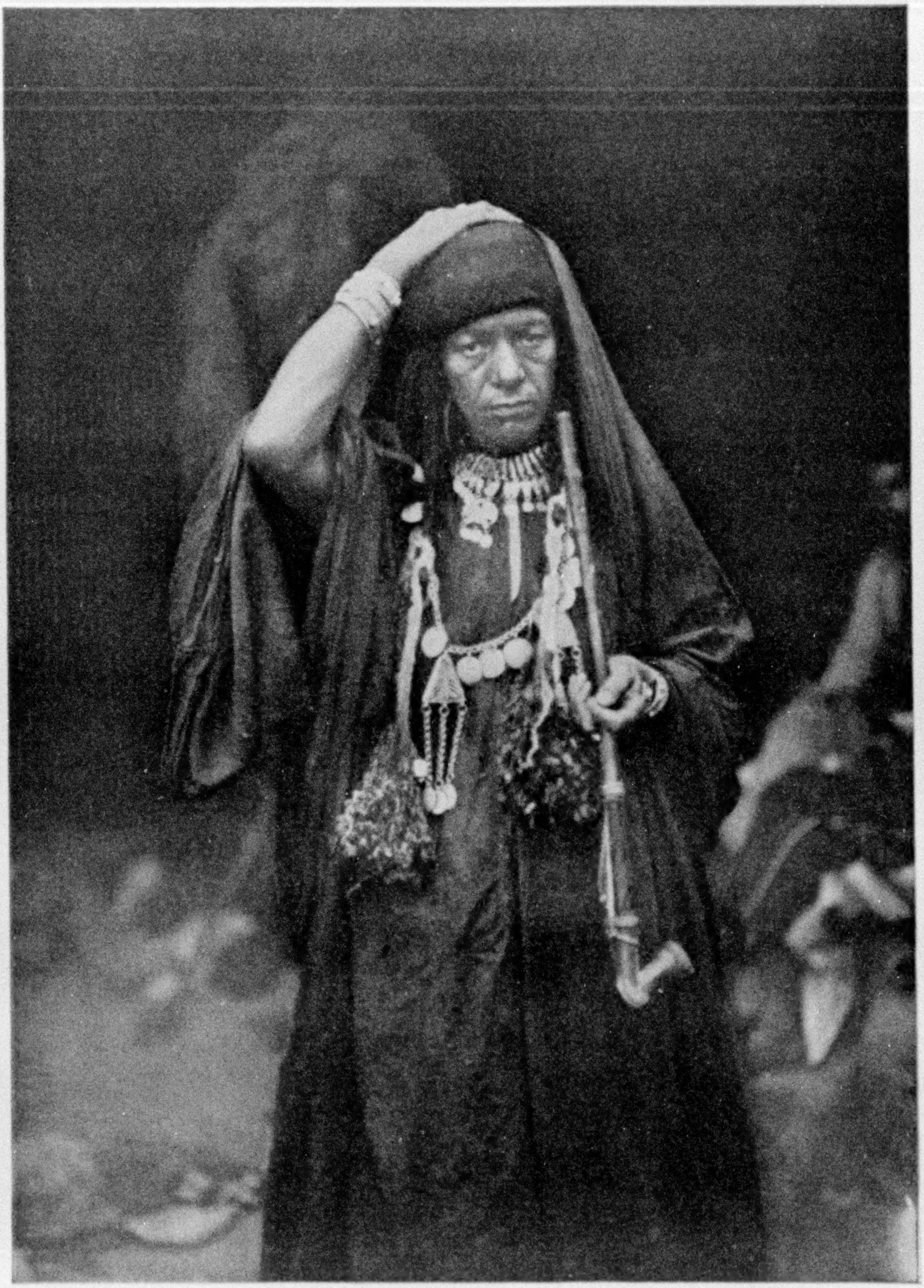
* Ruth 3: 15.

† Ezekiel 16: 10-13.



THE JERICHO MEDICINE WOMAN

ALTHOUGH women are looked upon as something inferior, still, when they have signalized themselves by some special attainment, they are frequently the object of respect and reverence. The Jericho women dress like the Bedouin, but live in villages. Photo by the American Colony, Jerusalem.

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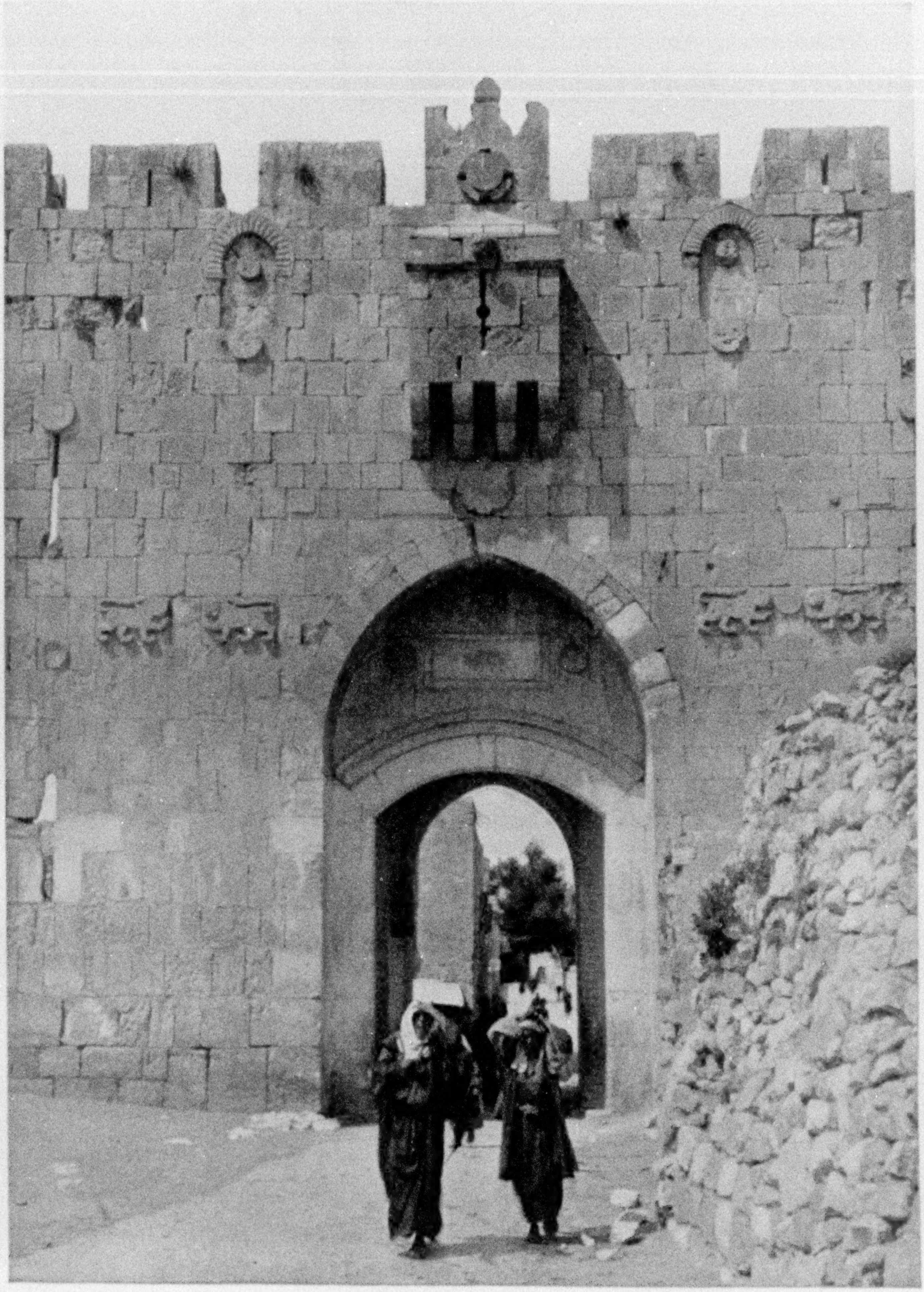

"BAB-SITNA-MIRIAM": JERUSALEM

THIS gate is called by the Arabs the "Gate of Our Lady Mary," and is otherwise known as St. Stephen's Gate. The lions that appear are said to have been placed here by the masons to commemorate the meeting of the two gangs of workmen at this point on the completion of this wall.

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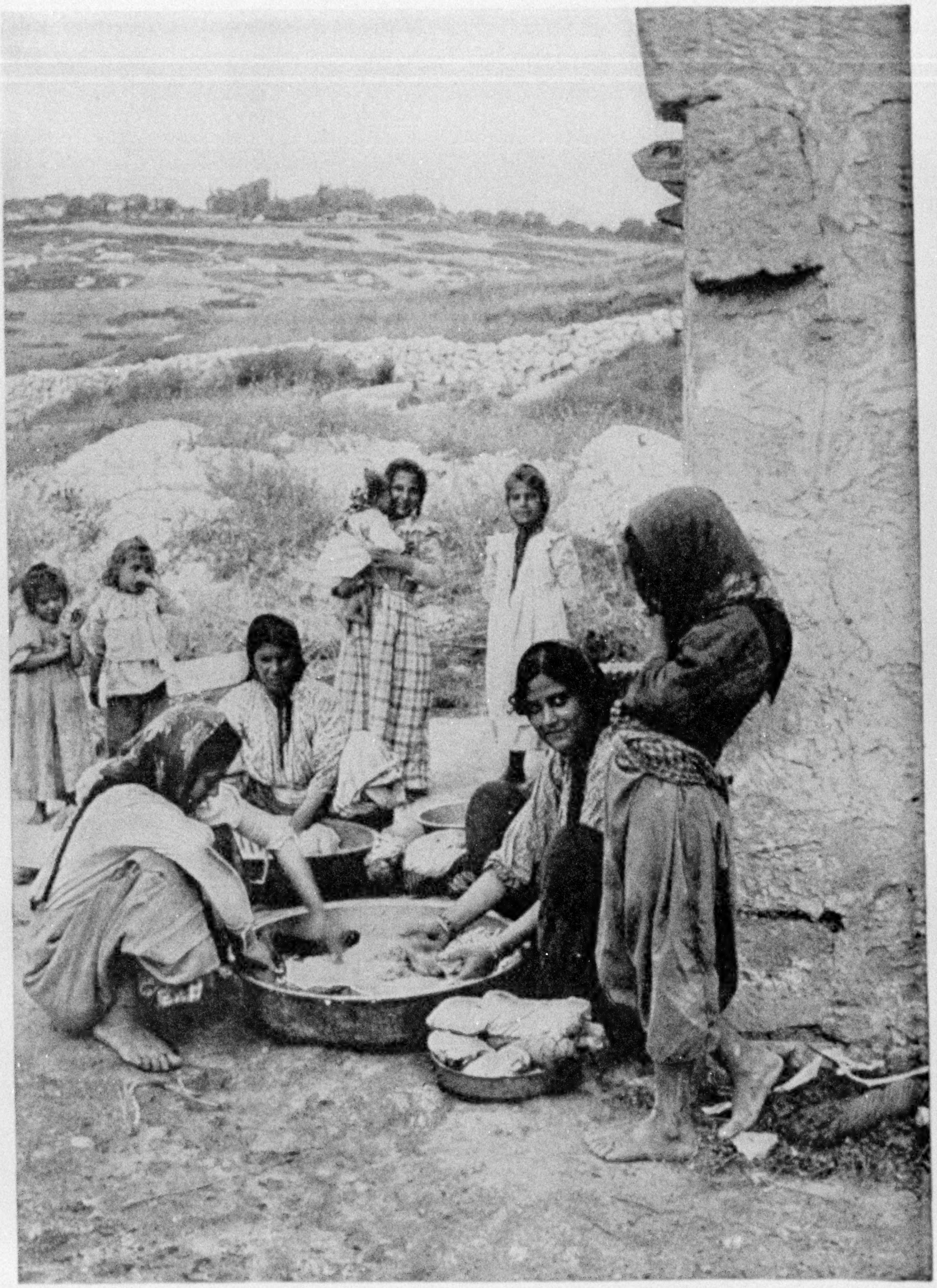

WASH DAY: NAZARETH

"Unfortunately, in the Nazareth district European materials are fast displacing the handmade goods."

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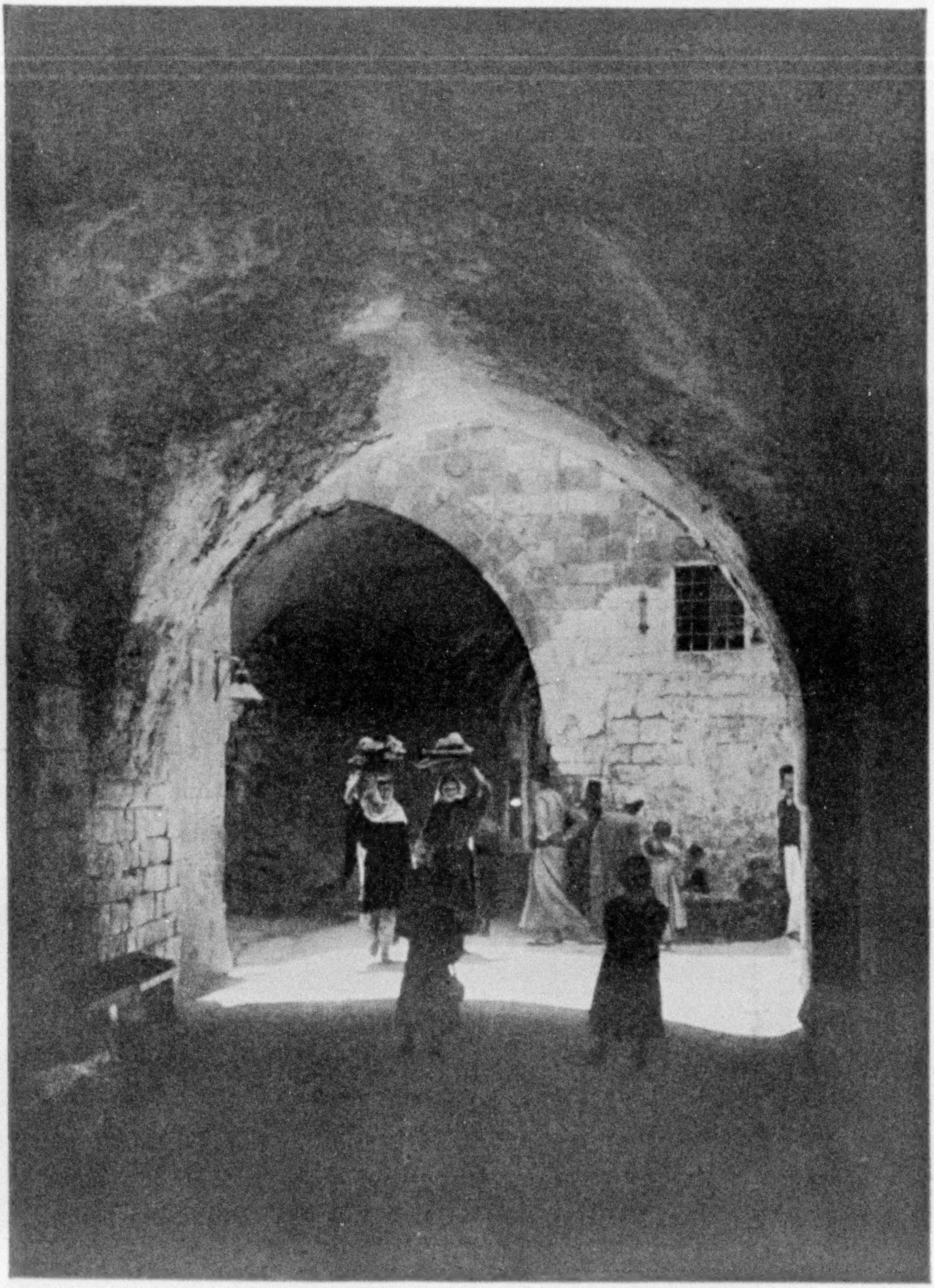

"BAB-EL-HABIS"

This street is called in Arabic the "Door of the Prison," since it leads to the jail.

XUM

tation of being handsome. Their faces are a full oval, their complexion fairer than the ordinary *fellaheen,* often having very red cheeks, and attractive in the setting of their striking headgear. Their Nazareth sisters have gained a little less renown. Both are Christians and supposed to have a considerable strain of Crusader blood in their veins.

THE ATTIRE OF THE MEN

The clothing worn by the men is very varied, and so we will consider only the most typical. There is a long shirt made of white cotton cloth, also called a *tobe,* and in form much like the women's. Over this is a sort of gabardine made of striped goods, the waist being girt about with a leather, wool, or silk girdle. The colors are quite bright, red and yellow or black and yellow being favorites.

The headgear costs him, like the woman's with its silver attached, more than all the rest of his outfit. A low domelike fez, with a blue silk tassel, is wound round with a turban (see page 313).

This turban indicates where he comes from or his class. In the district north of Jerusalem the turban consists of a large square of white linen, with a colored border woven in; around Hebron it is of silk, golden yellow and red.

A plain white one denotes a man of letters; a plain red, that he is a dervish or holy man, and a plain green again, that he claims to be a direct descendant of Mohammed. Inside this fez is a heavy felt cap, and often between them one or two old fezzes are found, while next to the head there is still another cap of white cotton cloth. The object of these many layers is to make the headgear heavy, which is commonly believed to prevent headache.

Similarly the women with their heavily weighted caps do not remove them night or day. Between the layers of the turban the man stows away his snuff-box, jackknife, often a large pack needle, sometimes money and valuable papers if he has any. They have a witty saying to the effect that if one lacks a place of safekeeping let him make his head his custodian.

Little boys are dressed like the men, with the exception that they have no turban until about 12 years old, and when his father gives a boy his first he feels just as proud and important as any American boy over his first long pants.

The men shave their heads clean, leaving only a central topknot of long hair, and to shave the beard, once it has been allowed to grow, is considered a great disgrace. To swear by one's own beard, or the beard of the one with whom the controversy is being waged, is the usual thing, as well as bringing in that of the Prophet to add weight.

The trick of shaving off half the beard of an opponent as a sign of contempt is practiced even today among the peasants exactly as it was in the days of King David when he sent his servants to Hanun, king of Ammon.*

AN OVERCOAT, CARRY-ALL, AND BED-CLOTHES COMBINED

The top garment or overcoat of the *fellah* is of coarse, woolen cloth woven in broad stripes of black and white or dark blue and white. In some districts the men do the spinning themselves in their spare time (see page 313), take the yarn to the village weaver to be converted into cloth, and then the women sew them.

This coat is as simple in form as it is possible to be. It is nearly square and in length extends a little below the knees, is open down the front, and has an opening in each upper corner to pass the arms through. The best of them are made of only one piece of cloth, the width of which is the length of the coat, so that the only seams required are along the shoulders.

Such a garment undoubtedly was the "coat" over which at the crucifixion the Roman soldiers "cast lots" rather than "rend it," for it "was without seam woven from the top throughout." †

It serves as a kind of carry-all, the wearer carrying various things in it: on rainy days it is pulled up over the head and sheds the rain fairly well, and at night it is the covering in which he sleeps.

It is strange how fond both men and women are of keeping their heads well wrapped up in cold and wet weather, both when walking and sleeping, while the feet and legs can be quite bare and exposed to the cold and wet with seemingly but little discomfort.

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* 2 Samuel 10: 4-5.

† John 19: 23-24.

When the native men travel and night overtakes them far from a village, they lie down in an open field or by the roadside, thrust the head into one corner of the *abayeh*, and, wrapping it round the body, have little care whether the legs be bare or not. It is quite common to see men thus sleeping with a stone for a pillow, just as Jacob did of old at Bethel.*

In the Mosaic law we read: "If thou at all take thy neighbor's raiment to pledge, thou shalt deliver it unto him by that the sun goeth down: for that is his covering only; it is his raiment for his skin: wherein shall he sleep?" † Today the giving of small articles as a pledge or security is quite common; still, any one taking an *abayeh* from a poor man to deprive him of it over night is considered as unmerciful and a kind of Shylock.

THE OLDEST EXISTING TYPE OF HEAD-DRESS

In some districts or villages the men wear the Bedouin headgear, consisting of a large square of cloth called *kaffeyeh.* It is doubled cornerwise, laid on the head, and held in place by an *'agal,* a thick double coil made of wool or goats' hair and black in color. The variations of this *'agal,* or coil, show from where the person comes (see page 271).

It is probable that this form of headgear is the oldest of those now in use in the country. A small Canaanitish figure in pottery, dating back to about the 14th century B. C., now in the Whiting collection at Yale, although of necessity very crude, has such a band around the head, and shows how very ancient is the origin of this *kaffeyeh* and *'agal.*

Among certain Bedouin, at the death of a woman these *'agals* are removed from the head and placed on the corpse as it is being carried from the tent to the grave; and in the Book of Ezekiel a "tire" is twice mentioned‡ as part of a man's headgear, and he was told by God that his wife was about to be taken away with a stroke; but he was not to mourn or weep, but to "bind the tire of his head upon him." This leads us to suppose that the "tire" of that time must have been the same in principle as the present-day *'agal.*

THE MARRIAGE CUSTOMS OF THE HOLY LAND

The villagers of Palestine are mostly of the Mohammedan faith, while fewer in number are the Christians belonging to the Catholic and Greek Orthodox churches. Some villages are entirely Christian, and there are a few which have both religions represented, but in this case each class has its own quarter.

We are, throughout these descriptions of the life of the present inhabitants of the Holy Land, devoting our observations to the Mohammedans, who are not only by far the most numerous, but also, from our standpoint, the more interesting, as they follow the ancient customs more closely than the Christians.

Marriage takes place at an early age, the young men at about 20 and the girls between 12 and 16. So long as the father is living, the burden and expenses of marrying his sons fall on his shoulders.

When a youth has reached a marriageable age and the expenses that a wedding involves can be defrayed, he begins in a business-like manner to look for a bride. When his choice seems to rest upon a certain girl from simply seeing her in the village, for no courtship is allowed, or if a girl is heard of in another hamlet that strikes his fancy, then the mother of the bridegroom, with a retinue of her daughters and women friends, goes to see the prospective bride.

If she is from another village, they may spend a couple of days "looking her over," as the expression is, learning whether she bakes well and is handy at all kinds of work, seeing if she is good looking, and, above all, that her eyes are perfect. One who, like Leah of old, is "tender-eyed,"§ is but little sought after.

FIXING THE PRICE OF THE BRIDE

The young man, with his father, uncles, and other male relatives and friends, next makes a visit. They formally ask for the girl's hand. It would be considered impolite for the girl's father to meet the

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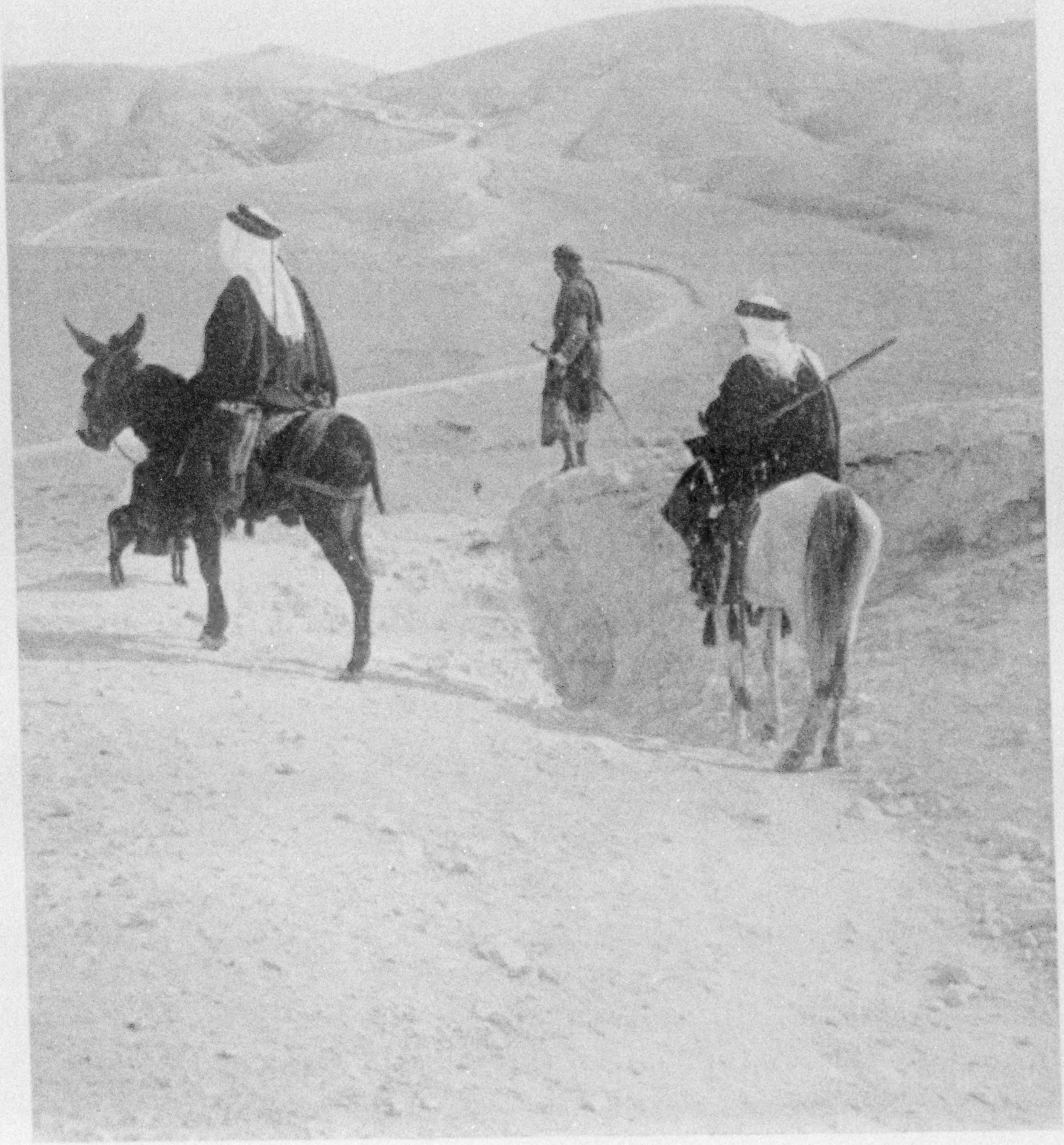
* Genesis 28: 11.

† Exodus 22: 26, 27.

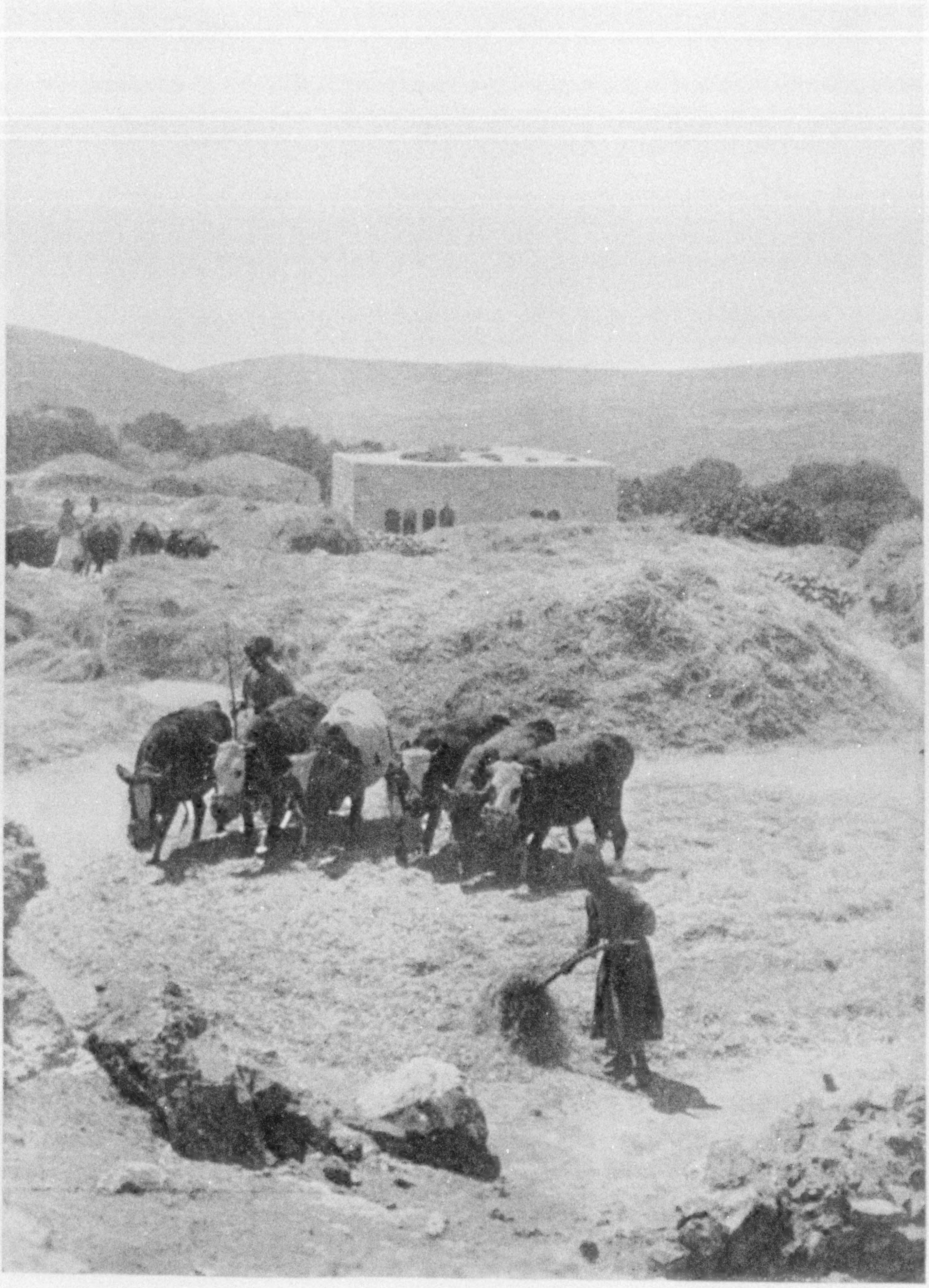
‡ Ezekiel 24: 17, 23.

§ Genesis 29: 17.



THE ROAD TO JERICHO

The two Bedouins in the foreground are wearing their characteristic head-dress, the white cloth and double coil of goats' hair. This is reputed to be one of the oldest known forms of headgear still in use and has been traced back to the fourteenth century before Christ (see page 270).



TREADING OUT THE GRAIN

"Threshing by the primitive methods employed is the most tiresome task of all the *fellah's* round of toil. In many places it is done entirely by treading out beneath the feet of the animals, which are tied together abreast and driven round and round over the spread-out grain. The mules and horses are provided with flat sheet-iron shoes for all kinds of work, and the cattle, just as the threshing season begins, are specially shod" (see page 281).

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request with a refusal, for if he objects to this suitor, he will not agree to the amount to be paid for her. The groom's father then offers for the bride a sum far in excess of what he really expects to give, thereby exhibiting his generosity; but this is only byplay.

Different men present urge that for their sakes the price be lessened by a certain sum, and so on until the amount is brought down to what the bride is actually known to be worth—that is, to about the habitual price. This offer being finally accepted by the father of the girl and the details of the betrothal contract arranged, the kid or lamb which the visiting party has brought with them is killed and dressed.

As these preparations are in progress, and others drop in from the village, the bridegroom or his father will rehearse the contract with the bride's father over again, so that several witnesses may hear the terms agreed upon in case of a dispute arising later. The bride has nothing to say in the matter; she is not consulted.

WHAT A BRIDE IS WORTH

The price of a bride depends on her age, beauty, usefulness, and the family to which she belongs. The daughter of an influential sheik is greatly sought after and will bring many times the price given for even superior girls from families of less importance.

The prices range in sums which represent in American money from $100 to $400, besides which the minor expenses bring up the total considerably, often doubling it.

Among these the bridegroom, according to his ability, must give a present to the guest-chamber of the bride's village, a new dress to the bride's mother, and an *abayeh* (outer garment) to her father; and her oldest uncle on both her father's and mother's side must each receive a new garment with a gold coin in the pocket. He has also to provide two feasts, for which a man in average circumstances must furnish 15 fatlings.

Meantime the father of the bride has given her from the money paid as her price, say from $20 to $40, with part of which she gets the proper coins and with them makes her first married woman's headgear. With the rest she buys a couple of pairs of bracelets, some finger-rings, and an *iznak*, or neck chain.

The balance of the money the father keeps, just as if he had sold some cattle or produce, except that it is the custom for him to give her an every-day *tobe*, or dress, a veil, and a mattress, pillow, and quilt.

THE BRIDE LEAVES HER NATIVE VILLAGE

From the time the trousseau is bought until the actual wedding day, a period from a week to 10 days, there will be dancing every night in the guest-chamber by the men, while the women make merry in the bridegroom's home.

When the bride belongs to another village, they go for her the day before the wedding, the company consisting of the bridegroom and his men and women relatives and a lot of his young men friends, all dressed in their best and armed with whatever weapons they may possess, and many of them mounted. They take with them several sheep or goats.

Upon reaching the village, they slaughter all the animals they have brought, and the entire village partakes of the feast. The bride is now arrayed in her new costume, puts on the married woman's cap and all her jewelry, her face is covered with a green or red gauze veil, and finally there is thrown over her entire person a man's gabardine.

She is mounted on a horse or camel, and with the firing of guns, the racing of horses, and a great send off, they leave the village, the bride's mother carrying the bridal chest along on her head, she being about the only person who goes with her, except perhaps a sister or female friend.

As the bride leaves the village she receives a gold coin of about $2 in value from the villagers, which in fact is part of the amount paid by the groom to the guest-chamber, and each of her uncles gives her a present in money. In each village through which she passes on her way she is met and a piece of money given her.

The bridal party has now arrived at

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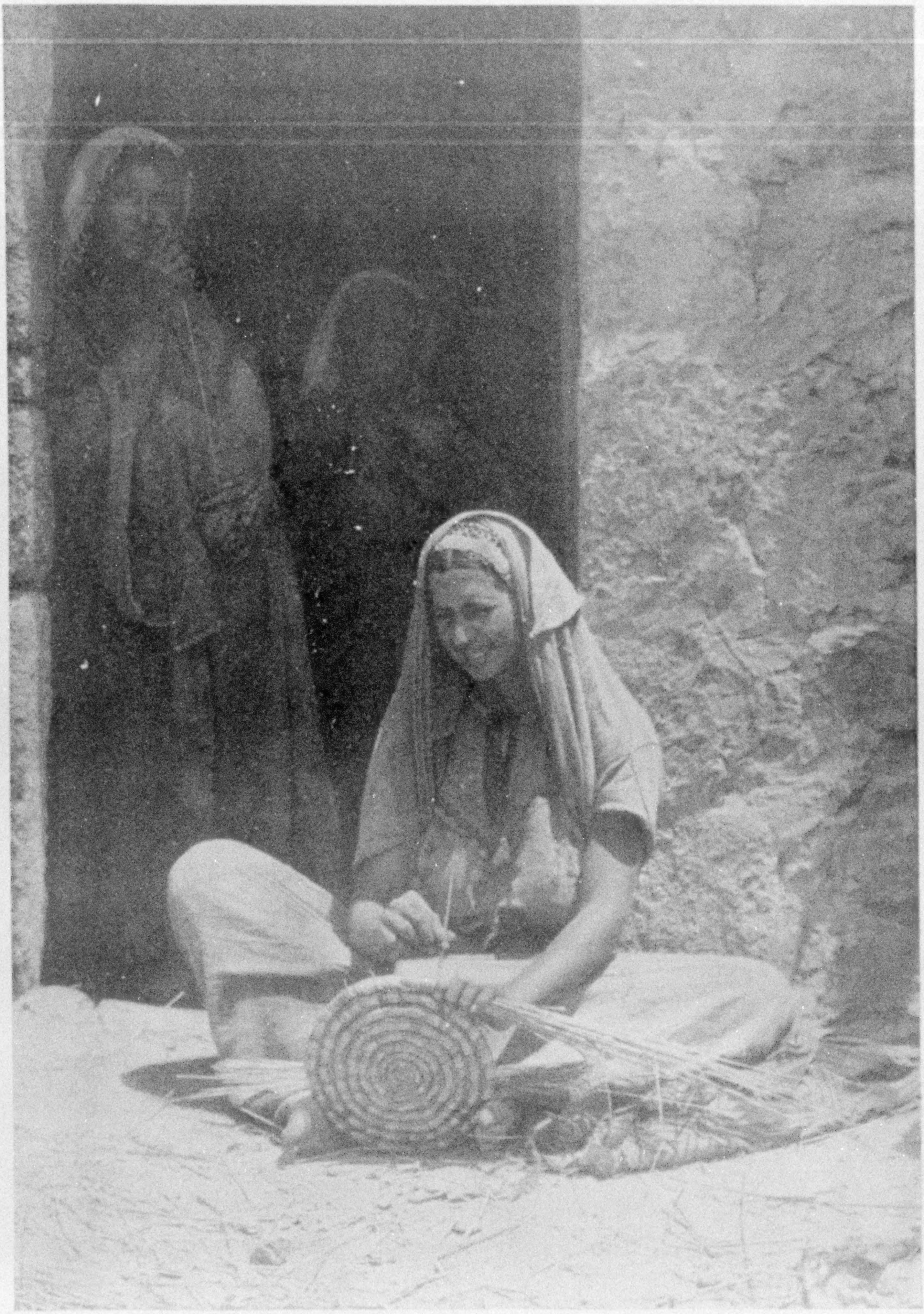
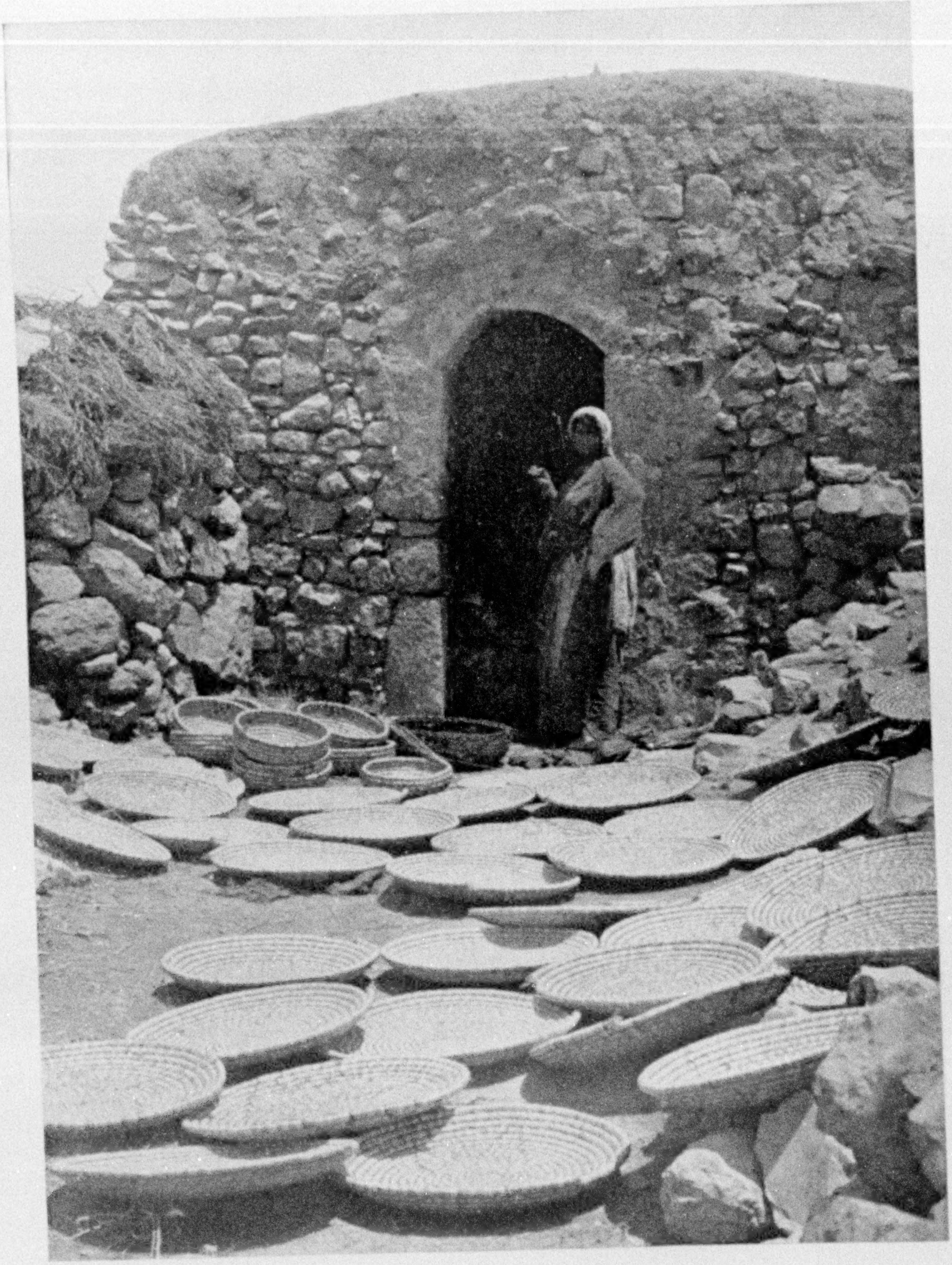


A VILLAGE INDUSTRY

During harvest time the village women can be seen selecting fine straw from the grain piles, which they subsequently weave into straw baskets and trays. The process of manufacture is quite simple, as can be seen from the picture.



DRYING STRAW BASKETS

After the baskets have been made they are laid in the hot sun to dry. The women will then carry them long distances to market, where they sell them for an amount corresponding to five cents in American money. To the Western mind this does not seem a very great reward for labor, but they are satisfied.

the bridegroom's village, and the bride and those with her become by invitation the guests of the first house they reach, and this opportunity of entertaining them is looked upon as a distinctive honor. The host kills a fatling and prepares a feast to which only women are admitted, and here, under the protection of her mother, the bride spends her first night in her new village.

When the bride has arrived safely, messengers are sent back to invite her father and male relatives to the ensuing ceremonies, and if the groom be prominent or wealthy he calls all his friends in the surrounding country to take part in the marriage feast.

THE WEDDING CEREMONIES

Early the next morning the wholesale slaying and cooking is begun, and a special dish is prepared for the women. During the day the religious formalities are attended to with great secrecy. The bride, in the presence of two witnesses, appoints her father or nearest male relative as her representative.

The groom and the bride's representative are now seated facing each other, and a certain exact formula is thrice repeated with much punctiliousness. The parties are prompted by the *khatib* (teacher), or the religious head of the village, who does not allow the slightest mistake to pass uncorrected. In this manner the young man accepts the bride as his wife and the representative of the girl in her stead agrees that she be his wife. At this time the marriage contract is written, which gives the names of both parties, the sum paid for the bride, with all the minor details.

The explanation of the secrecy observed while the couple is thus being married is that they believe that should an enemy be present and either spill flour on the ground or tie knots in a string a specific calamity will surely befall the newly married pair.

Toward evening the young men dress the bridegroom in his best, and with the entire village go out into some open field, where they have horse-racing and shooting (see page 309), in both of which the groom is supposed to demonstrate his skill, while the women stand by and sing.

Returning to the village, the men go to the guest-chamber and the marriage supper begins, while the women congregate at the groom's home and likewise feast. A portion is also sent to the bride and another to the family where she is a guest. The details of these customs vary, however, in each district.

When the feasting is over in the guest-chamber, each guest drops a coin as a present for the groom into a handkerchief spread out for the purpose. Amid much joyous excitement a herald announces the name of each donor and the amount given, calling upon Allah to recompense him.

Meanwhile the women have taken the bride, with much rejoicing and merriment, from the house where she has been visiting to her new home, going either mounted as she came from her village or on the shoulders of two women, while in some localities she walks.

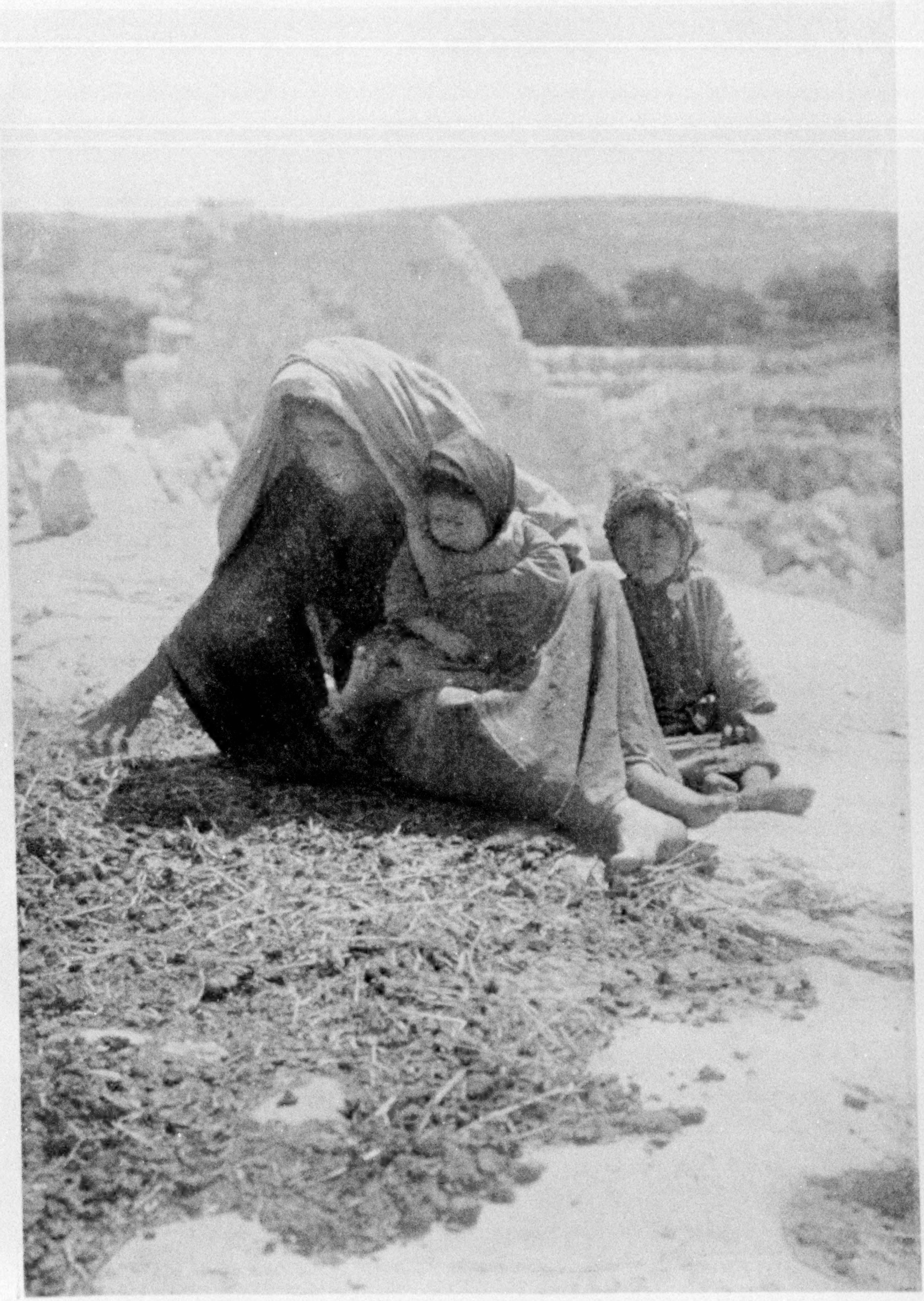
They dress her in her bridal attire, her arms and legs having been previously dyed with henna, the face is decorated with gold leaf, and the eyelashes and eyebrows blackened with *kohl*, which to the *fellah* is the acme of beauty. Her head and face are finally covered with a thin veil. The men are notified when all is ready, and with much pomp and firing of guns, they escort the groom to his house, when all retire and he alone enters.

Removing the bride's veil and wiping off the gold leaf, they stand together, while presents of money are given to the bride by her male relatives and the women, as the groom had received his previously. The husband begins by giving his first. No men are admitted except the male relatives of the bride, and they only long enough to present the bride with their gifts.

For the first few days the bride keeps on her finery and does no work; but this luxury and immunity she does not long enjoy, for we soon find her at the regular hard work which falls to the woman's lot.

AGRICULTURE IN THE HOLY LAND

In the mountain districts the farm land is usually owned by peasant proprietors, each man's property being composed of various small pieces scattered about near



GATHERING FUEL

"After the day's baking, the woman adds as fuel some dried manure or stubble, which ignites from the hot ashes and keeps smouldering, and so heats the oven for the next day's baking" (see page 291).

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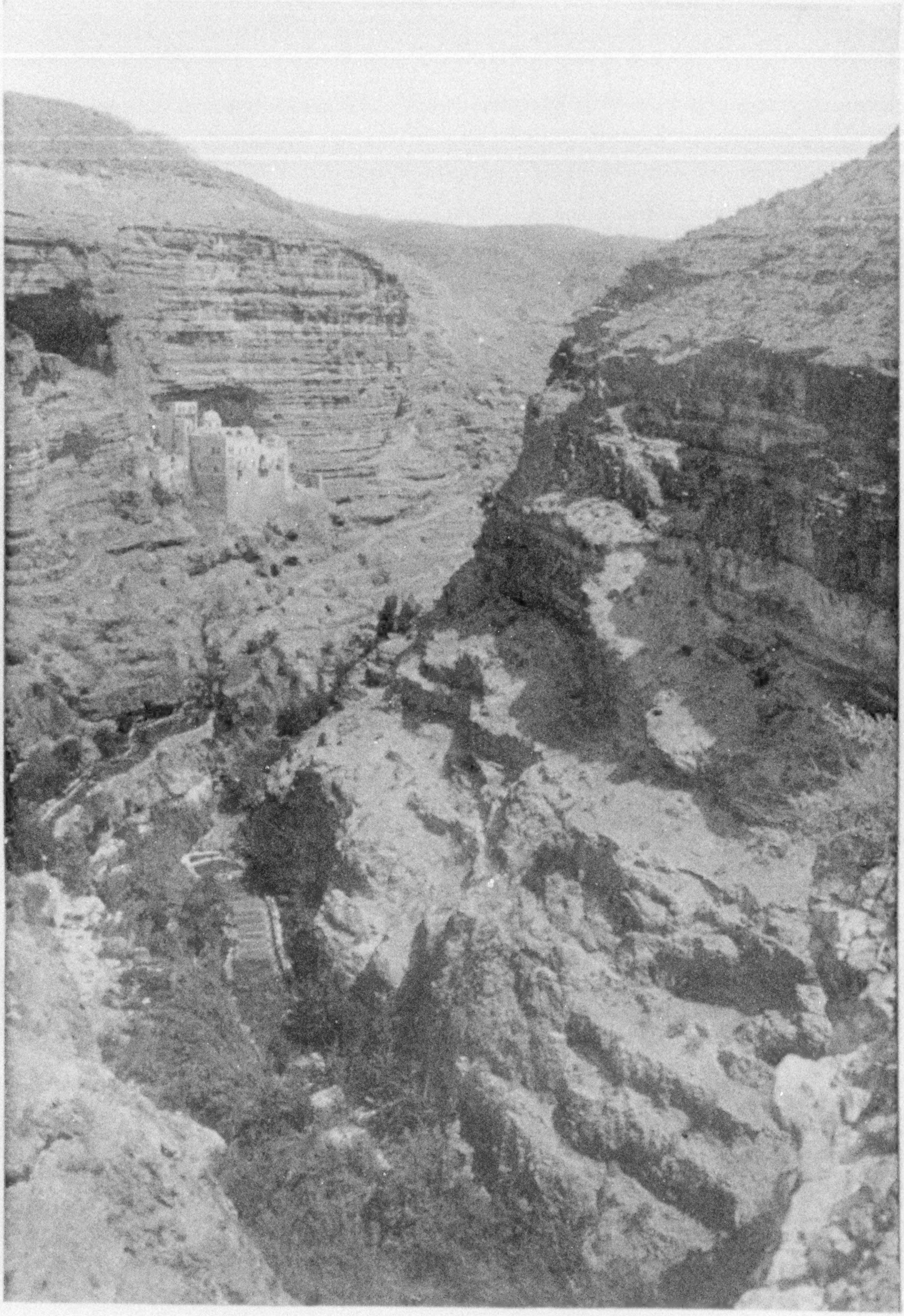

WHERE THE RAVENS FED ELIJAH

In a deep ravine a few miles east of Jerusalem runs the brook Cherith, alongside of which Elijah was fed by the ravens (1 Kings 17 : 5). The picture shows the brook as it turns the corner under the convent of St. George.

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the village in which he lives. The raising of olives, grapes, and many other fruits is the leading occupation, but almost every farmer grows some grain.

Down on the plains larger fields exist and cereals are largely planted. The land of a given village is frequently owned in common by the villagers, and a division of it takes place every year or every alternate year, and is so arranged that each man gets portions of the good as well as of the less desirable land.

Fences, in the western sense of the word, are unknown. In the mountainous country lands are inclosed by loose stone walls, still called by the ancient Hebrew name *jedar*, and on the plains by thorn hedges. When the open fields are owned individually, the boundary lines are indicated by deep furrows, in which at intervals stones are laid as "landmarks." It is therefore readily seen how easily these boundaries could be changed by an avaricious neighbor, undeterred by the Mosaic warning, "Cursed be he that removeth his neighbor's landmark."[*]

LAND STILL SOLD BY THE "YOKE" AND "REED"

Until a comparatively short time ago real estate was bought and sold by the use of a contract, which the chief men of the place witnessed and sealed; nor has this custom become entirely obsolete. Farming land is estimated by the *faddan*, which, being literally translated, is "yoke," but implies a piece of land "that a yoke of oxen might plow" in a day. (Compare I Samuel 14:14.) City property, on the other hand, is measured by a standard known as a "reed." We can trace its use far back into ancient times in the writings of Ezekiel and St. John.[†]

PLOWING AND PLANTING

Rain[‡] begins to fall about November, after a rainless summer, and as soon as the ground is well moistened the *fellah* starts planting the winter cereals—wheat, barley, lentils, beans, etc. The plow is a crude affair, made of oak, the bent parts being natural curves held together with iron bands; these bands and a small plowshare, which only scratches the ground a few inches deep, are the only metal parts.

Oxen are the favorite animals for yoking to a plow. Cows and donkeys are employed by the poorer people. Horses, mules, and camels (the latter only along the Mediterranean coast) are harnessed singly to plows, while sometimes one sees an ox and camel yoked together. In the Bible the command was "Thou shalt not plow with an ox and ass together."[§]

The *fellah* sows the grain on the bare ground and then plows it in. In rocky ground a man or woman follows with a pick to loosen the earth in the spots that may have been skipped by the plow. The soil is not fertilized. The disintegration of the underlying limestone feeds the soil, so that for thousands of years it has continued yielding crops.

The manure and rubbish, instead of being utilized, are allowed to accumulate in heaps outside the villages until they surround it like small mountains. Immediately a house is deserted and the roof falls in the women find it more convenient to dump their rubbish there than to go farther, and in a short time the ruined house becomes a dunghill.[¶]

After the winter crops have all been planted the vineyards and olive groves are plowed a couple of times and also the fields reserved for the summer planting. These latter crops are not put into the ground until the rains have entirely ceased.

Watermelons and muskmelons, tomatoes, a species of cucumber, vegetable marrow, are all raised without a drop of rain or of water by irrigation, but are sustained by the moisture stored in the ground from the winter rains, aided by the copious summer dews. The natives consider that rain falling after the summer crops have been planted is extremely detrimental to them.

During harvest time the fields are lively and picturesque; the entire family has a part in the work, the small children playing about among the sheaves, and even the babies are brought to the fields.

A large toothed sickle is employed by the reapers when the grain is long, but

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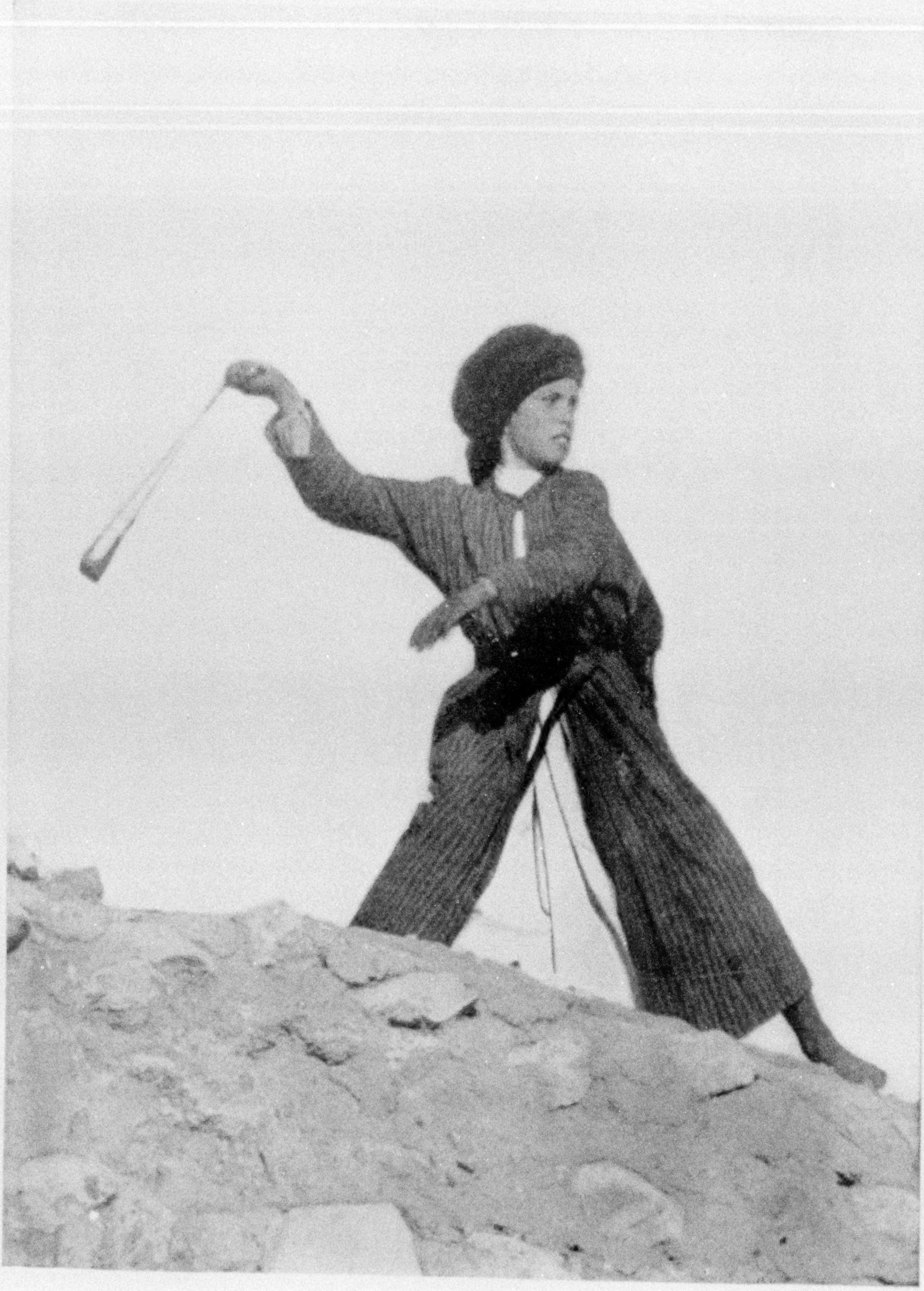
[*] Deut. 27:17.

[†] Ezekiel, 40th to 42d chaps.; Rev. 21:15, 16.

[‡] The annual average rainfall for the past 50 years has been 26 inches.

[§] Deut. 22:10.

[¶] Ezra 6:11; Daniel 3:29.



THE SHEPHERD'S SLING

"With this he becomes expert in throwing stones to a great distance and with great precision. With such a simple weapon . . . the stripling David . . . encountered Goliath and slew him" (see page 295).

if short a smaller one is used, the edge being quite dull; so that it does not cut, but simply uproots the grain. Sheepskin aprons and a large glove are often worn by the men harvesters; but the women, who are doing the very same work as the men, are provided with neither.

Destitute women and girls are allowed to follow the reapers and glean the fallen ears, which they tie into neat little bundles, dropping them on the ground as they go along, and these they gather up every evening and beat out the grain with a stick, just as Ruth did of old in the fields of Bethlehem.*

During the reaping period what the Bible calls "parched corn" is made in almost every field. Some wheat not fully ripe is cut down and set on fire, the straw only being consumed. The roasted heads are rubbed between the hands and the chaff winnowed out in the wind. Without further preparation, this roasted wheat forms one of the common articles of diet of the reapers. Undoubtedly such was the "parched corn" which Boaz reached to Ruth.†

THE THRESHING-FLOOR

A large flat rock in the mountainous country or a hard piece of ground on the plains is selected for the threshing-floor, and this, up to the present time, bears the Biblical name *joren*. Here all the grain is gathered.

We read that Jacob, after his dream at Bethel, promised to God one-tenth of all he should receive.‡ Later, when this land was possessed by the Israelites, they were enjoined to give a tenth of their produce to the Levites.§ We also find Samuel telling Israel what they could expect if they were determined to have a king to reign over them, saying: "He [the king] will take the tenth of your seed, and of your vineyards, . . . and he will take the tenth of your sheep." ¶

Nor does this custom ever seem to have ceased, for the tithe is still collected. There are numerous mosques, schools, and other religious institutions which receive it from specified properties on which it is charged, and from all other tillable land it is collected by the government, the right of exacting these taxes from each village being farmed out to the highest bidder.

The sheaves are brought to the threshing floor on the backs of camels, mules, and donkeys, and in big bundles on the heads of the women, and are stacked up in the requisite number of piles. One of these is first chosen by the tax collector and has to be separately trodden out and the grain delivered to him before the rest of the work begins.

Threshing by the primitive methods employed is the most tiresome task of all the *fellah's* round of toil. In many places it is done entirely by treading out beneath the feet of the animals, which are tied together abreast and driven round and round over the spread-out grain (see page *272*).

The mules and horses are provided with flat sheet-iron shoes for all kinds of work, and the cattle, just as the threshing season begins, are specially shod. On each half of the cloven hoof a small iron shoe is nailed, and this not only facilitates the work of separating the grain, but prevents the animal from becoming lame.

HOW THE GRAIN IS WINNOWED

In the simple treading-out process the animals are driven around slowly over the grain, while the men, with wooden forks, keep stirring it up. When thoroughly threshed, the straw has been chopped up into short bruised bits and all is then heaped up.

To separate the grain, "the fan," which is a wooden fork, is used, the farmer waiting until the wind is blowing hard enough without being violent. Such conditions are best found in the evenings or during moonlight nights. The winnower tosses up the trampled grain into the air, and, being heavier than the straw, it falls into a heap by itself, while the fine straw separates into a neat pile a little distance away. The dust and very fine particles are completely blown away. This refuse is called *ur* by the Arabs, the original Hebrew name.

A sieve is now employed, and through this the grain is passed to take out the

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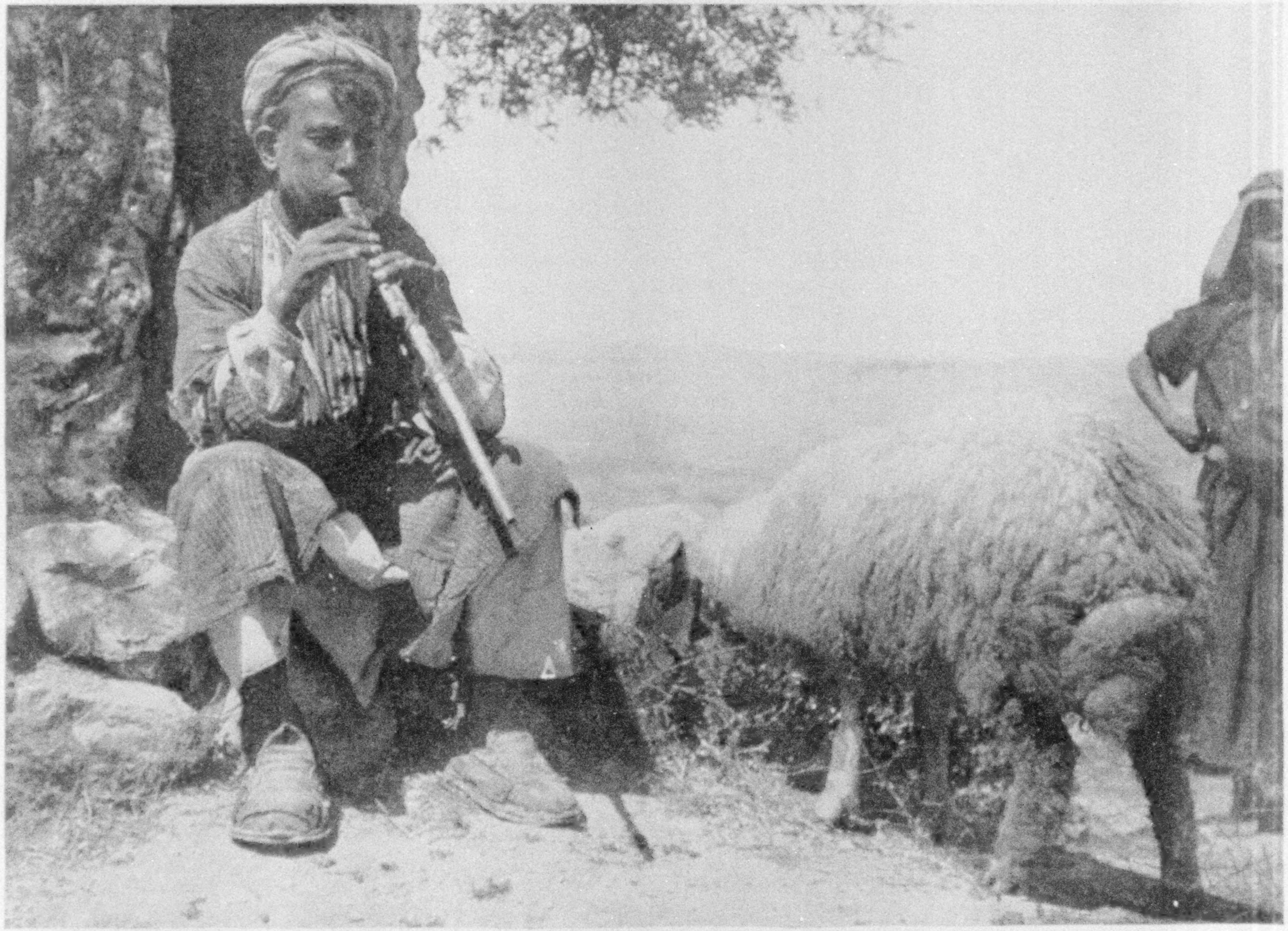
* Ruth 2: 17.

† Ruth 2: 14; 1 Sam. 17: 17 and 25: 18.

‡ Gen. 28: 22.

§ Lev. 27: 30.

¶ 1 Sam. 8: 15, 17.



THE SHEPHERD'S FLUTE

These simple pipes have been popular in the land for thousands of years and are doubtless similar to those used when Solomon was anointed. "And the people piped with pipes and rejoiced with great joy, so that the earth was rent with the sound of them" (1 Kings 1:40)

SUNRISE ON THE FLOCK

"Those unacquainted with the pastoral life of this land, who do not know the almost human relationship between the flocks and their keepers, may wonder how the sheep are separated by their different owners when morning comes. The sheep respond to the voice of their own shepherd, but, so well do they know the individual members of the flock of which they are part, that when the morning breaks each flock gathers itself together as a matter of habit" (see page 296).

coarse stubble that is too heavy to be blown away. Sometimes a wooden shovel is used to give the grain a final winnowing. The presence of the stubble is accounted for by the fact that during harvest the grain is largely pulled up by the roots.

This fine straw is kept as fodder for the animals, for hay is unknown. The Arabic name for this is *tiben*, being identical with the Hebrew word which has been translated "straw," and in Bible times as now was fed to the animals or mixed into the clay when making bricks. We read in Exodus that when Pharaoh refused to give the Hebrews straw (*tiben*) to make bricks they were scattered throughout all the land to gather stubble instead.*

It might be interesting to note in passing that when the mounds covering the ruins of the Jericho of Joshua's time were unearthed by German explorers a few years ago the ancient bricks were found to be identical in size and texture with those made now by the inhabitants of modern Jericho, having *tiben* mixed in just in the same way.

THE THRESHING-FLOOR MOSQUE

In the southeast corner of Jerusalem, close by the old city walls, is an inclosure some 30 acres in extent, in which stands the far-famed Mosque of Omar. Its graceful dome, tiled exterior, and richly decorated interior, with superb mosaics and stained-glass windows of arabesque designs, make it one of the chief attractions of Jerusalem to the tourist (see pages 298 and 305).

Besides its beauty and grandeur, the past history of the site demands attention. Thither Abraham came to sacrifice on the summit of Mount Moriah his only son, Isaac.† Later King David bought the threshing-floor located on this site from Ornan, the Jebusite, and built an altar to offer sacrifice in order that the plague then raging in Israel might be stayed. "Then David said, This is the house of the Lord God, and this is the altar of the burnt offering for Israel." ‡ Although David made great preparations, the actual building of the temple on this spot was left to his son Solomon.

A second temple, far less grand, was erected there by the Jews after the return from captivity in Babylon, and the third and magnificent one was reconstructed and enlarged by Herod.

After the complete destruction of Jerusalem in A. D. 70, Hadrian erected here a temple to Jupiter. Between this and the time that the present mosque was built by Abd el Melik, little is known of the history of the site.

To the Moslems this mosque, erroneously attributed to the Caliph Omar, is the most sacred shrine after the Kaaba at Mecca. Under the gorgeous dome, seen only in the subdued light which filters in through matchless stained glass, is the flat rock supposed to be part of the original threshing-floor (see page 305).

THE LEGEND OF THE MOSQUE OF OMAR

The legend runs thus: Two brothers were threshing out their grain upon this floor. The older one wakes one night and sees all about him his large family of children, while his brother lies on his grain piles alone. Thus contemplating his many blessings, the abundance of the crop, his large pile of grain catches his eye, and again thinking of his bachelor brother, and wishing to add some happiness to the life of one who has no family to love and be loved by, rises and from his own pile adds a quantity to that of his brother.

After the elder brother has again fallen asleep, the younger awakes, meditates on the many bounties he should be grateful for—a full crop and health and strength—his brother and his large family attract his thoughts. He reasons that he who has no one dependent upon him could well spare some of his crop and thereby perhaps add joy to his brother's life. Unwittingly he returns to his brother's pile exactly the amount that had shortly before been taken from it, and in the morning, neither knowing what the other had done, both were surprised to find their grain undiminished.

As soon as the grapes, figs, and other fruits begin ripening, the *fellah*, with his

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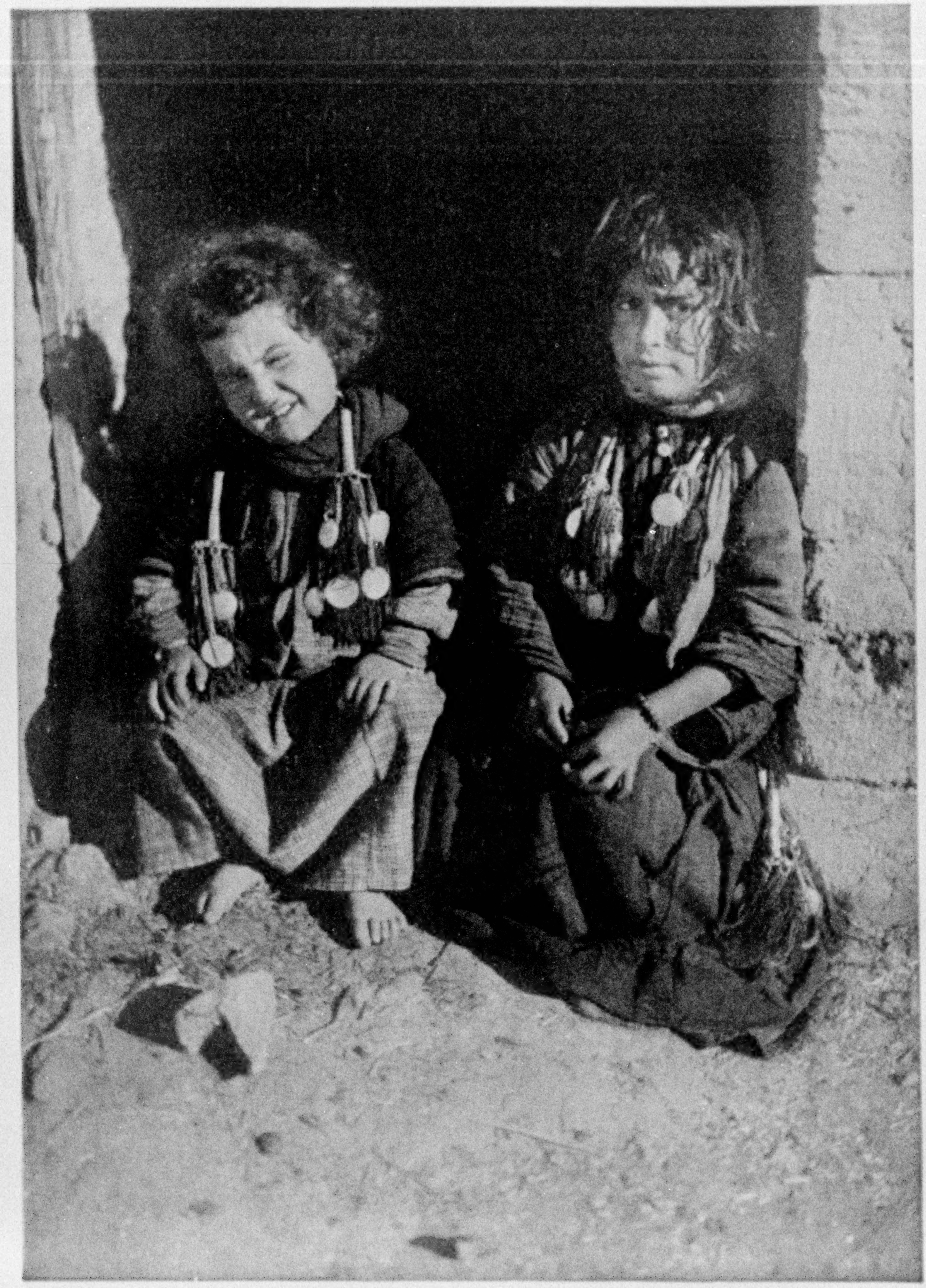
* Exodus 5: 12.

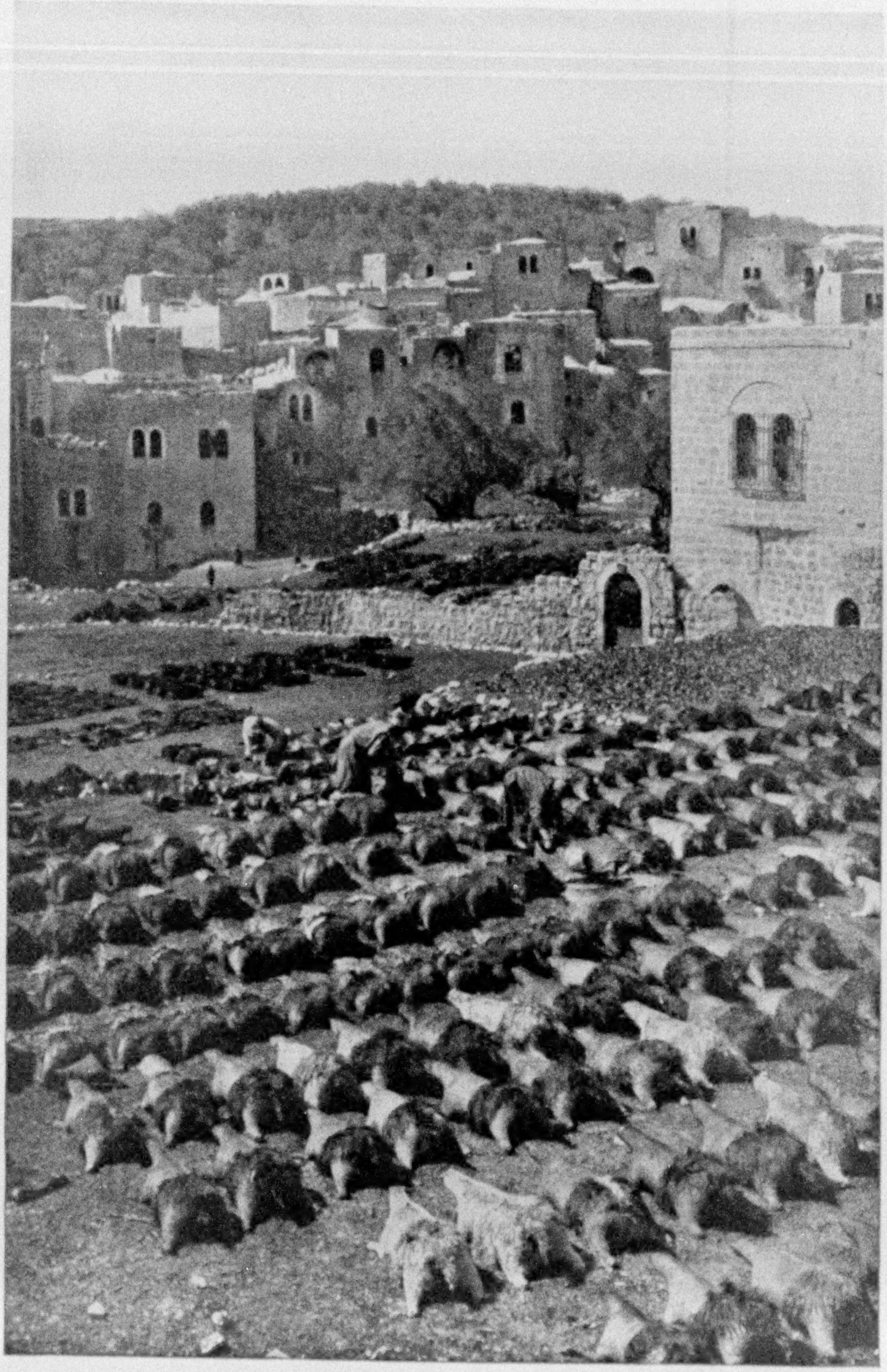
† Gen., ch. 22.

‡ 1 Chron., chs. 21 and 22.



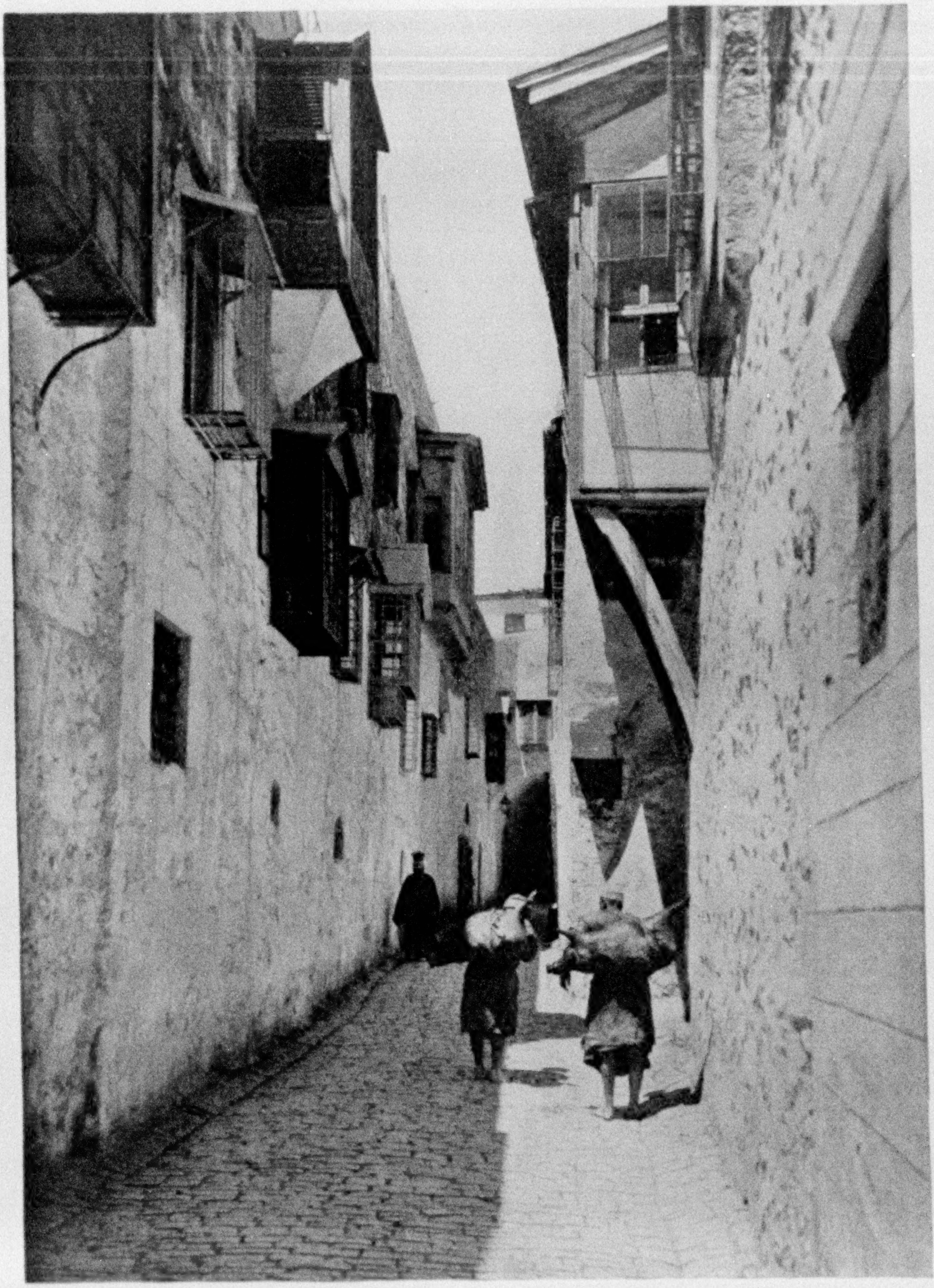
SISTERS

"But in the Samaria district they braid their hair in two plaits, on the ends of which hang silver tubes with small coins or ornaments attached." Photo by the American Colony, Jerusalem.



A TANNERY THAT USES NO VATS

Goat skins are shown here being tanned to be sold to the city water-carriers. They are filled with oak bark and water and laid out in the tannery yard to cure.



IN THE CHRISTIAN QUARTER: JERUSALEM

This street is peculiar in respect to the number of projecting windows.

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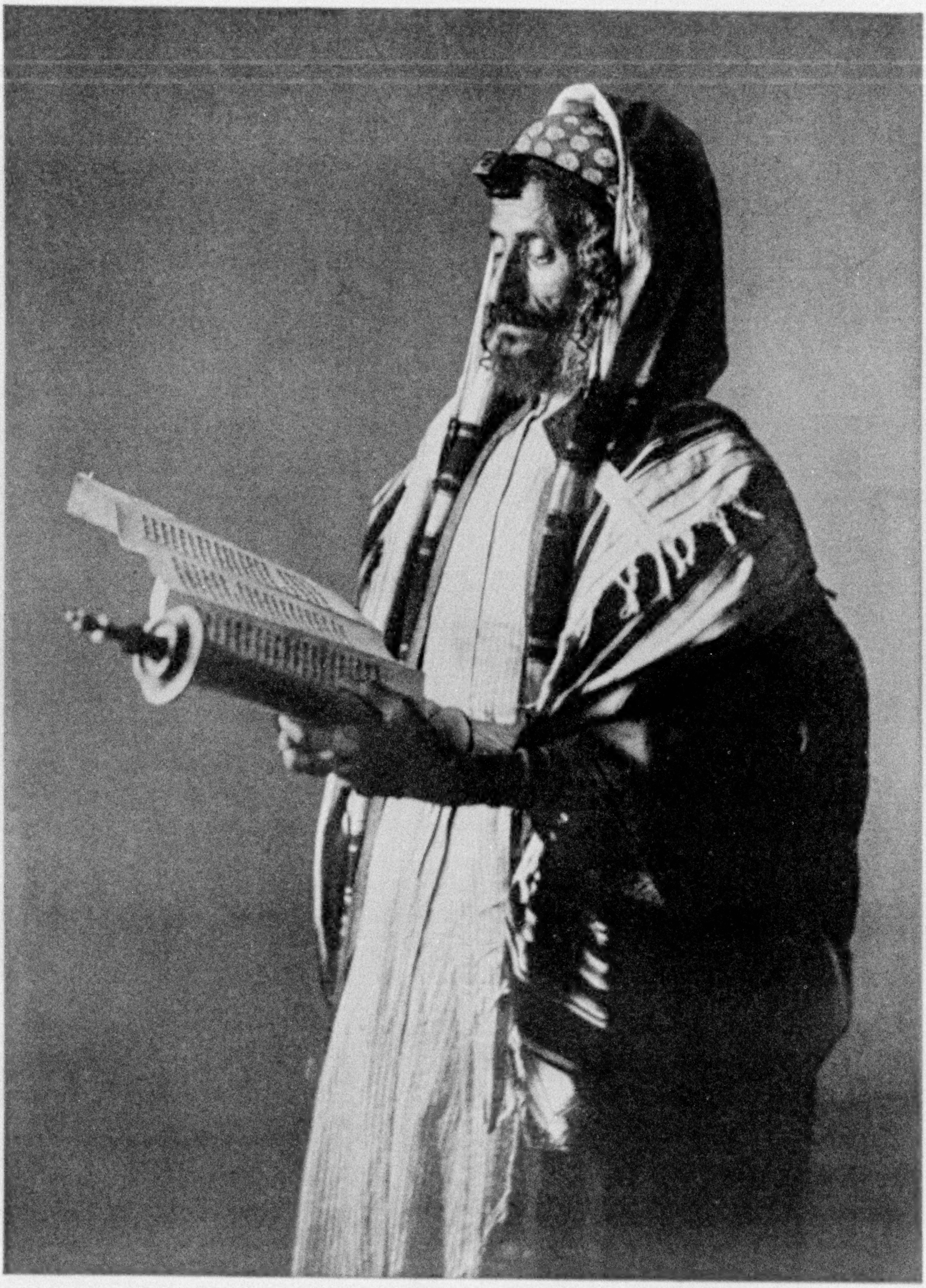
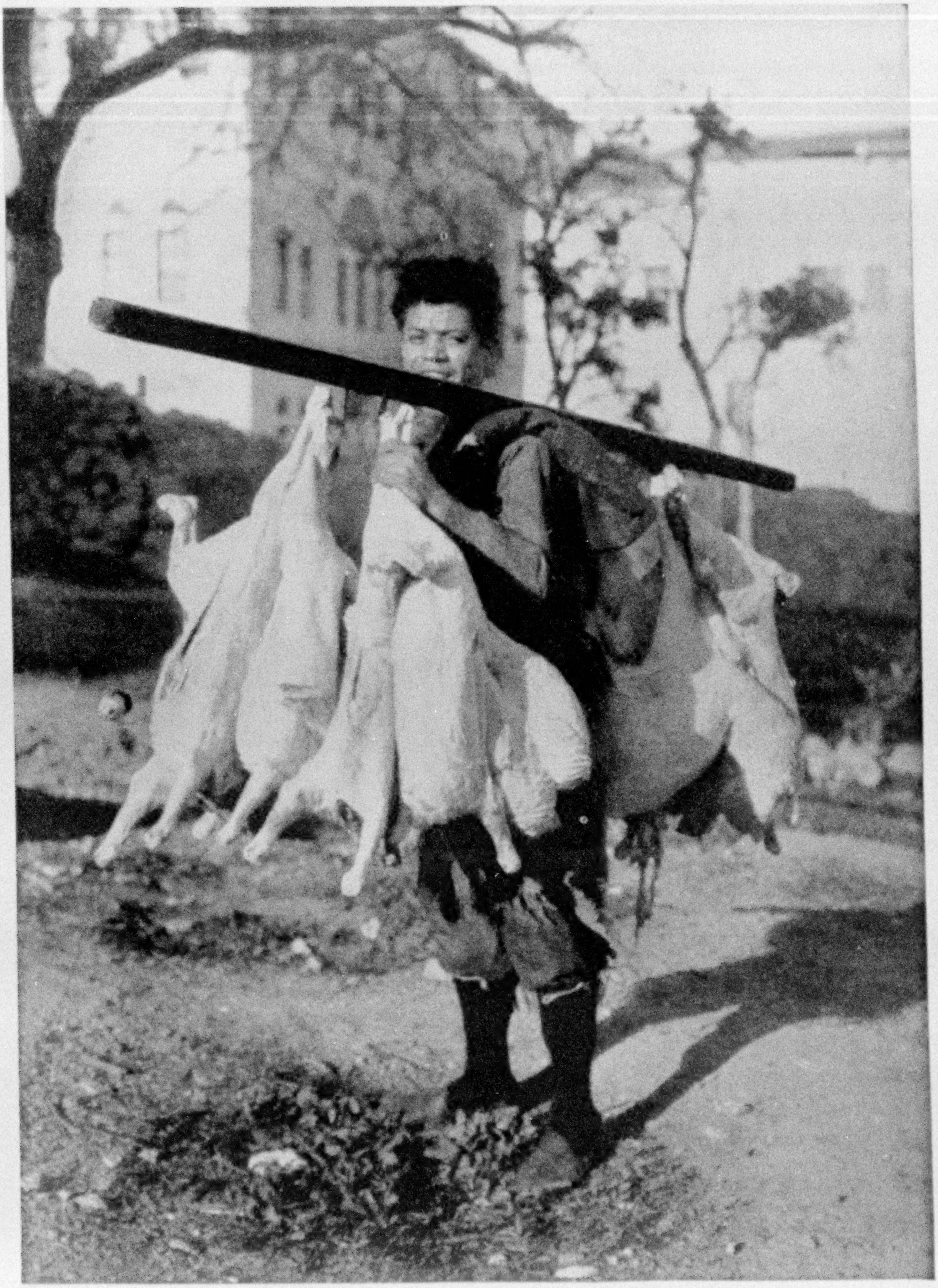


AN ARABIAN JEW

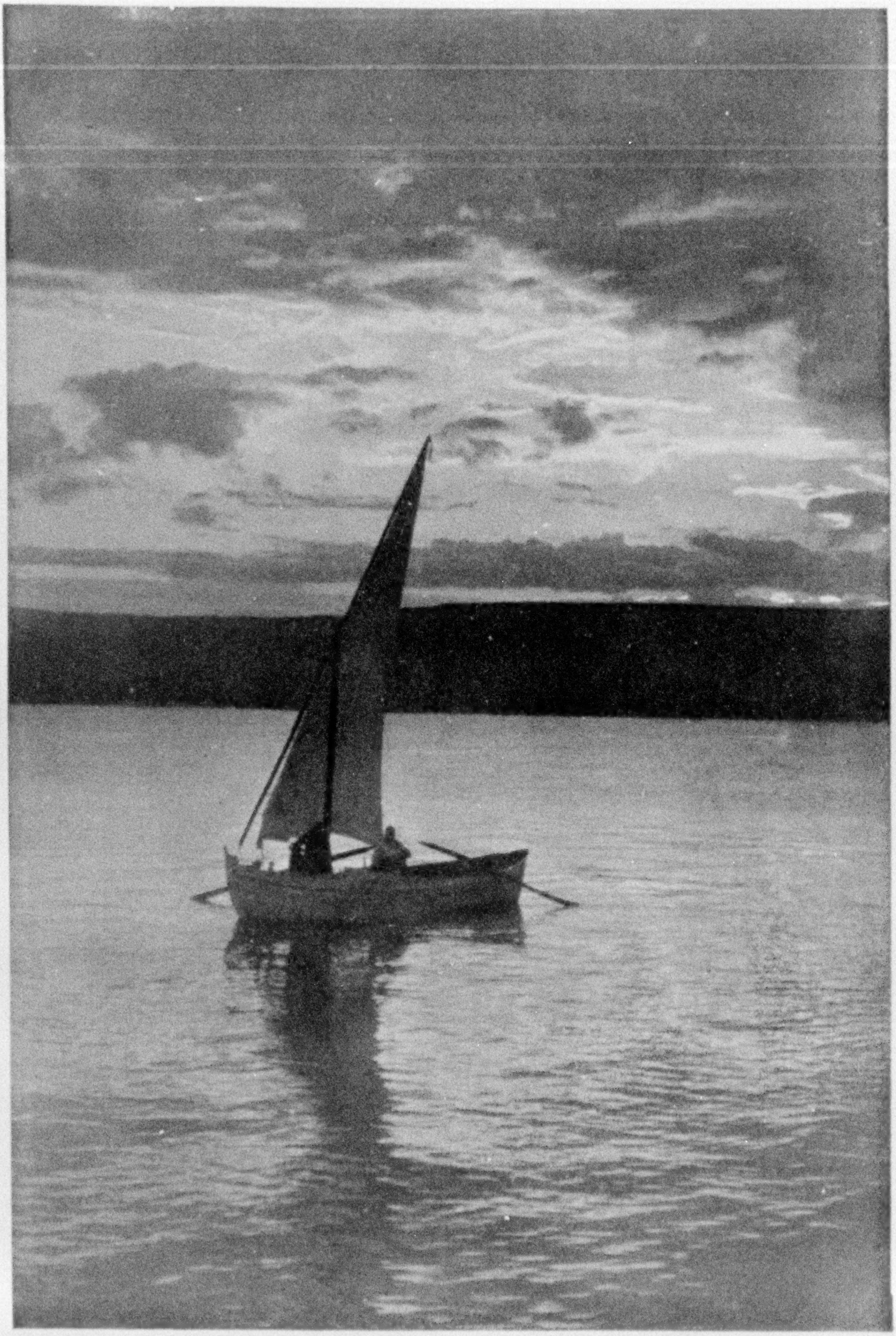
These Jews, claiming to be of the tribe of Gad, have lived for centuries in Yemen in Southern Arabia. They are more like the present-day inhabitants of the land than any other Jews.

XUM



THE SMILING BUTCHER

The dweller in Jerusalem has no scientific prejudices. As long as he gets his meat, it does not worry him if the delivery is effected under conditions that would horrify an American inspector of public health.



ON THE SEA OF GALILEE: A FISHING BOAT AT SUNRISE

The Sea of Galilee, known also in Biblical times as the Sea of Tiberias, the Lake of Gennesaret, and the Sea of Chinnereth, is about 13 miles long and 7 miles broad, while it lies 700 feet below the level of the Mediterranean.

entire family, moves out of the village into the vineyard.

The grape season is looked forward to as the best part of the year, and at this time the natives live for the most part on fruits and bread. Jokingly, the *fellaheen* say that they get so fat from eating grapes that their fezzes burst.

BEATING THE OLIVE TREES

A saying among the peasants likens the vine to a city woman, for it cannot stand being neglected for a single year; the fig tree to a Bedouin woman, for it can withstand about five years of neglect, and the olive tree to a *fellaha* woman, for it is still found alive after 60 years of neglect.

This simile is given to illustrate how hardy the olive tree is as compared with the fig and the vine. To an Occidental, familiar with the almost indestructible qualities of the olive, it also serves as an example of the hardiness of the women of this sturdy mountain race.

The olives are harvested in the fall, but by a method so injurious to the trees that they yield a full crop but once in two years. Instead of picking them by hand, for time is not money with these easy-going people, they beat the trees with sticks to knock off the fruit, which at the same time results in destroying the tender shoots which should bear the next year's fruit.

When questioned, they admit the folly of this beating, but add that their fathers did so and why should they change. Evidently they are copying not only their fathers, but the Israelites before them, for we read in the Mosaic writings, "When thou *beatest* thine olive tree, thou shalt not go over the boughs again: it shall be for the stranger, for the fatherless, and for the widow." *

The olives when salted or pickled in brine are valued food, for a peasant can make a meal of only bread and olives, with perhaps the addition of a raw onion. The oil is a food staple, taking the place of meat. It is also, to a limited extent, burned in small clay lamps, identical in shape with those found in Canaanitish tombs, many of which were buried here before the Israelites possessed this land.

CARE OF THE POOR

A characteristic of these poor peasants is their hospitality and their kindness to the destitute.

One can any day see a party of women coming to town with their baskets for the market, and as they pass the beggars sitting by the roadside, they drop them a bit of bread or a little of the produce brought in for sale, and frequently the donor will be seemingly as poor as the receiver.

One of the prettiest, perhaps, of all Arabic words is the one for bread, namely, *aish*, meaning life, for with them it is veritably the "staff of life." Bread is looked upon as almost sacred, and they will never allow a crumb to fall where it will be trodden upon, and if a fragment is found dropped, perhaps by some child, on the ground it is lifted and kissed and laid up on a wall or put into a crack where some animal or fowl may find it.

The village home has near it a small hut containing the oven, called the *taboon*. It is a dome some 3 to 4 feet in diameter, made by the women, of clay, with an opening in the top and is provided with a cover of the same material. It stands on the ground, slightly raised by stones beneath its rim. In the bottom is a thick layer of loose pebbles. It is heated by banking up around the outside a quantity of hot ashes.

After the day's baking the woman adds as fuel some dried manure or stubble (see page 277), which ignites from the hot ashes and keeps smouldering, and so heats the oven for the next day's baking. Bread is made from soft and elastic dough. The woman brings a bowl of it to the *taboon*, makes a rather thin loaf by throwing a piece of the dough from hand to hand, and then flops it on to the pebbles at the bottom of the oven.

About six of these loaves fill the oven, and when baked they are full of the indentations made by the small stones. When well made and eaten warm, this bread is very good.

"THE MOTHER OF ALL TURTLES"

A story is told of a woman who refused to allow her neighbor to bake some dough in her *taboon*. The neighbor then

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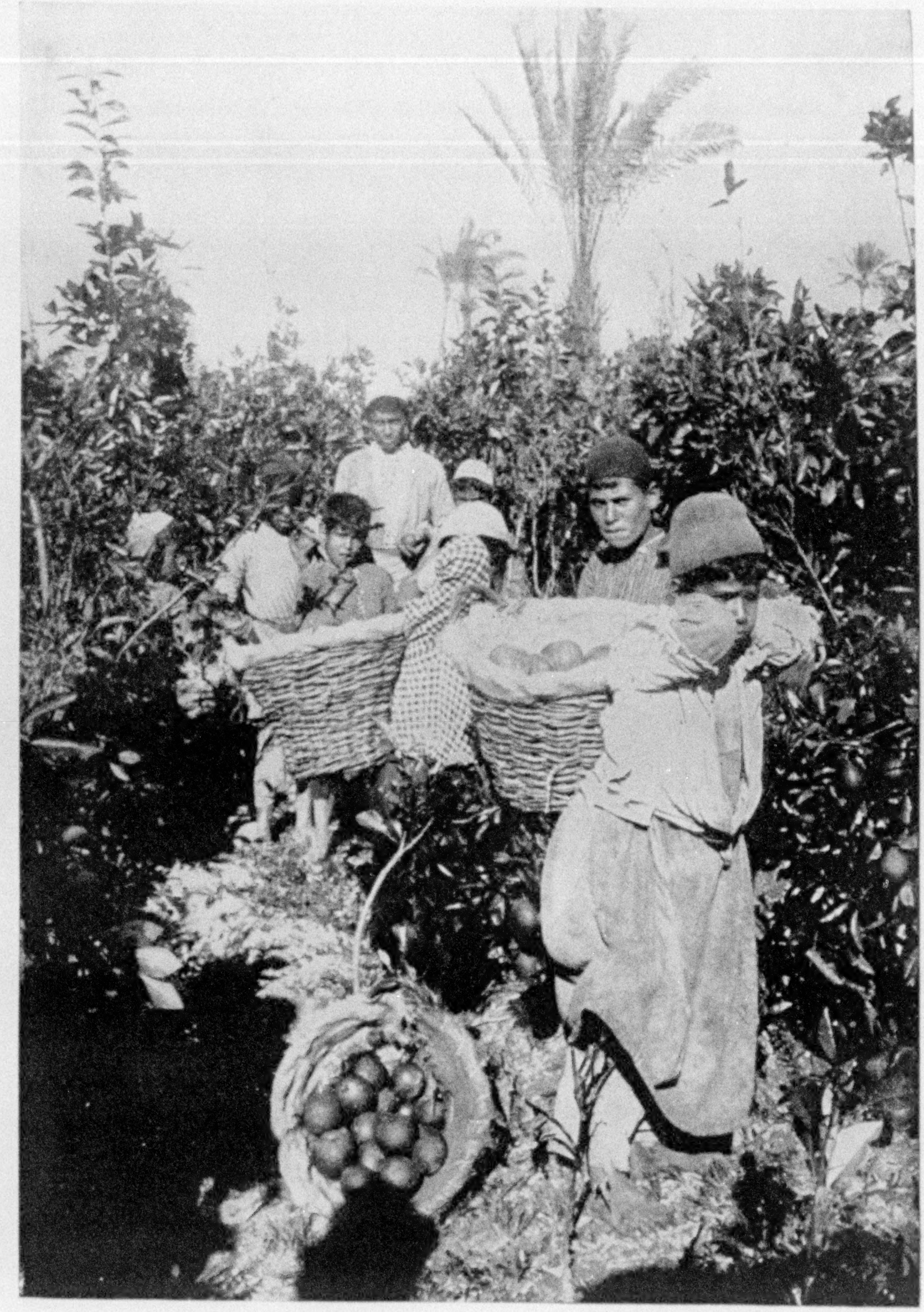
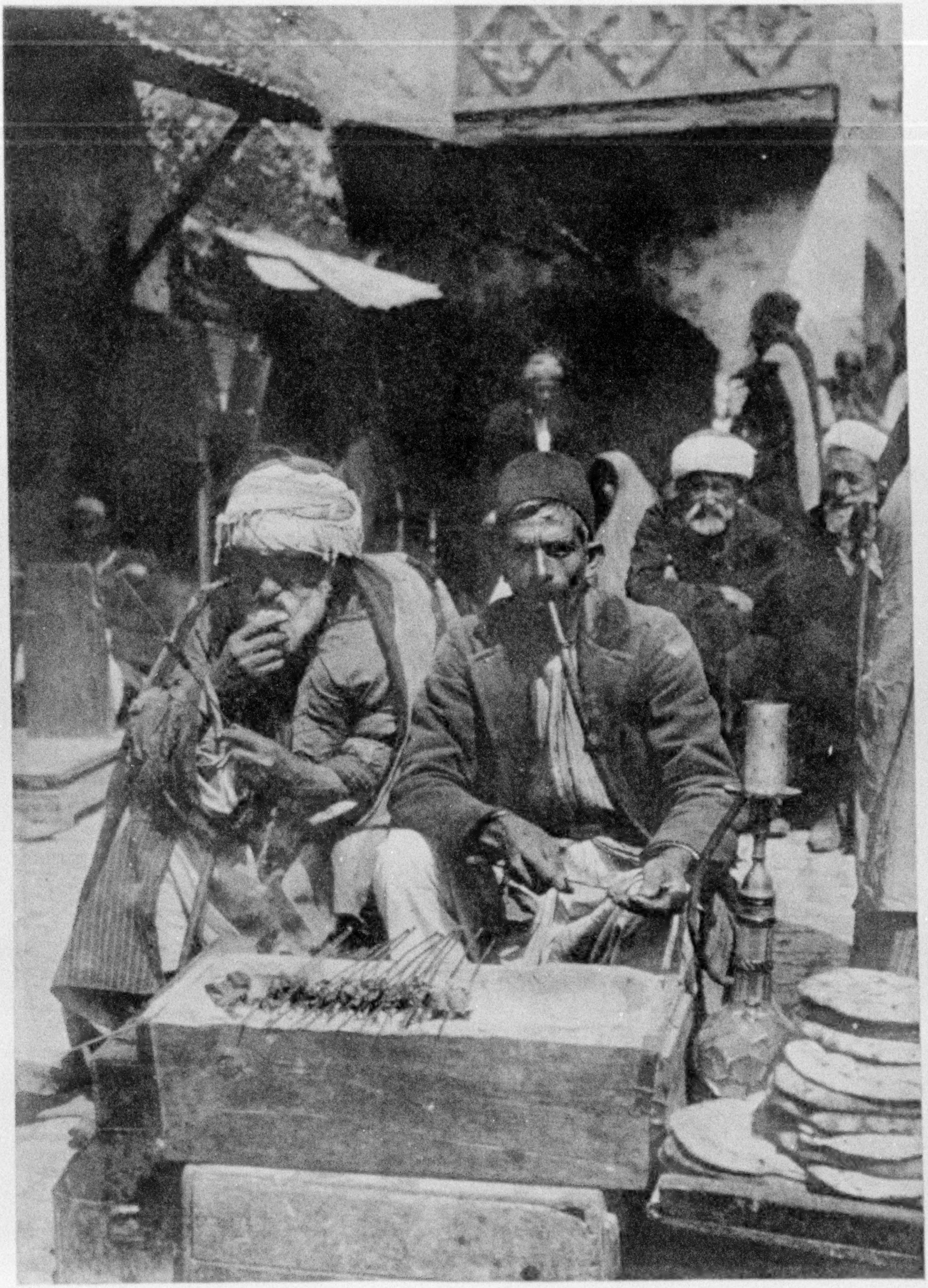
* Deut. 24: 20.



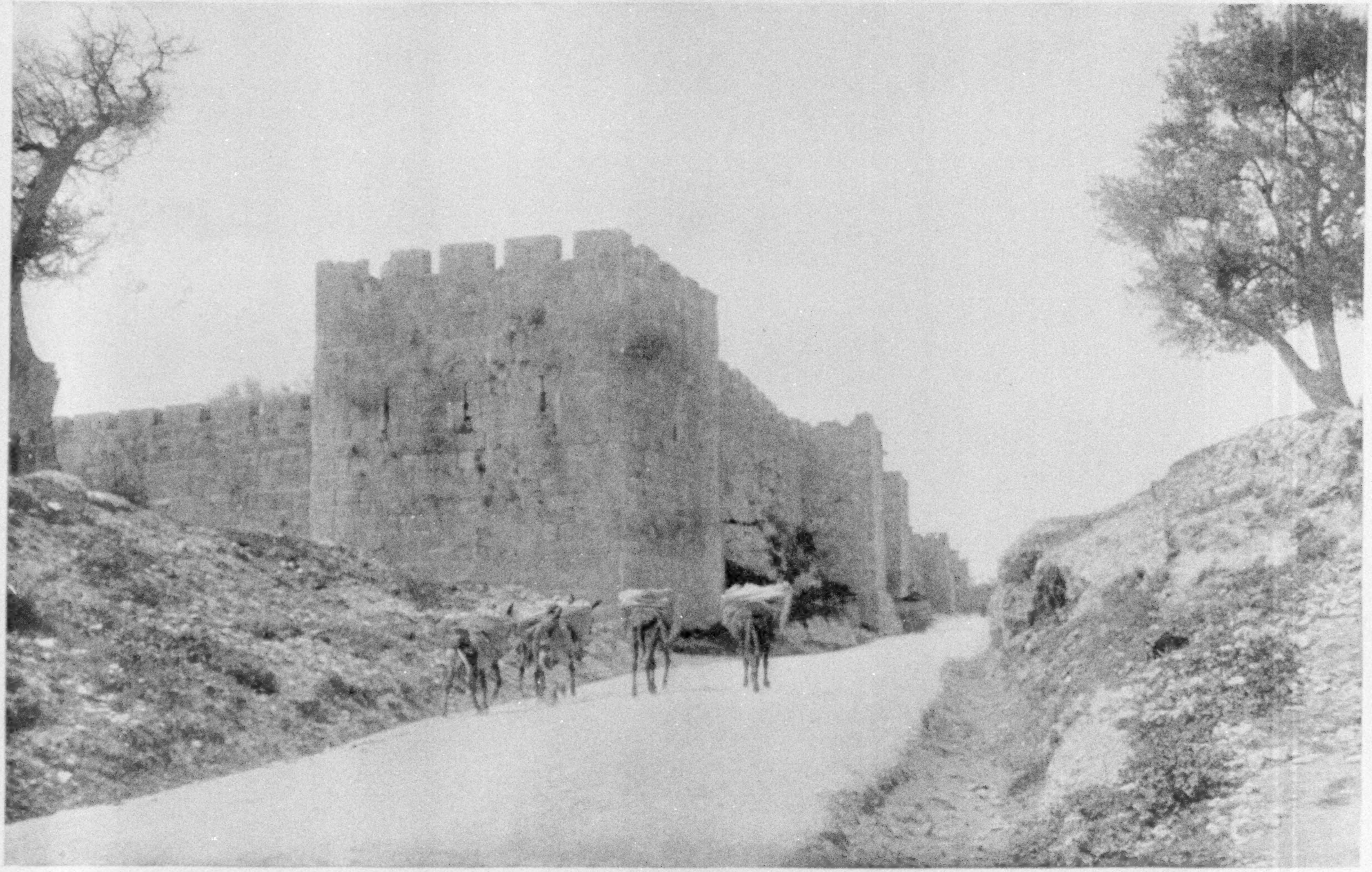
PICKING JAFFA ORANGES

Around the coast town of Jaffa are large orange groves, irrigated by water from numerous wells. Here are grown the Jaffa oranges which are world-famed for their size and flavor. Most of these oranges are shipped to England, where they are highly esteemed and bring good prices in the markets.



A QUAINT STREET RESTAURANT

The man shown here is roasting meat on iron spits over a tiny fire of charcoal. During the whole operation he is busily smoking his water-pipe, or *narghile*. Note the flat loaves of bread. These little restaurants are by no means uncommon in the streets of the larger cities of the Holy Land.



THE WALLS OF JERUSALEM

This is the northeast corner of the old city wall. Jerusalem was fortified by the Crusaders and later by Saladin in 1192. The fortifications were dismantled in 1219 and restored ten years later, only to be destroyed again in 1239. The present walls were built in 1542 by Suleiman the Magnificent.

begged the loan of a loaf of bread, to be returned as soon as she baked, for her oven was still too cool and her boy crying from hunger.

This was also refused, which so called down the wrath of the Almighty that an angel was sent, who, lifting up the hot *taboon,* or oven, placed it on the back of the merciless woman, leaving only the limbs and the head protruding.

So she who thus refused bread became the mother of all turtles, and if you seem to doubt it, the *fellah* will prove it to you by calling your attention not only to the fact that the turtle's shell resembles the *taboon* in shape, but also to the markings on the top of the shell like the pebbles used in the oven.

The shells of small turtles are much in vogue as charms, by peasants and city people alike, and are often to be seen strung on a cord along with blue beads, a bit of alum, etc., and worn by the children.

A story told by a peasant living at Artas, where King Solomon had his gardens,* runs thus: A certain *fellah* living by the seaside was in the habit of feeding every day a loaf of bread to a whale. The chief of the genii noticed it and, addressing him, said: "For your kindheartedness you shall be rewarded. Gold and riches you can obtain by working for them, but I will give you something you cannot otherwise get. You shall have the gift of understanding the animals, but mind you do not tell any one about it."

When he returned home with his tired oxen from the day's plowing he heard the donkey say to one of the oxen, "If only you would not eat your food the master would think you were sick and would not take you out to plow."

Hearing this the man began laughing, and his wife asked the reason, but he did not tell her. The next morning, to repay the donkey for his intriguing, he hitched him to the plow instead of the ox. When he was brought back in the evening the ox asked him how he liked plowing. He pretended not to be tired, but advised the ox that if he continued not eating, the master would slaughter him.

The farmer, hearing this, laughed heartily, but would not reply to his wife's queries as to the reason of seemingly laughing at nothing. Next morning he took out the ox to plow, and the beast, fearing that the man might be leading him away to slaughter, as the donkey had said, pulled back and did not want to move. The man, knowing the reason, again began to laugh, which so aroused his wife's curiosity that she insisted if he did not tell her the cause of his amusement it was because he did not love her.

After much importuning, he at last told her the whole story, and no sooner had he done so than he lost this peculiar gift and could no longer understand the language of the animals.

HOW DAVID SLEW GOLIATH

Some experience as a shepherd befalls almost every peasant boy whose family has flocks.

As he watches over the feeding sheep, he cuts a little wool from the back of one, spins it with the aid of only a smooth pebble, and then converts the yarn into a sling such as is always carried in the scrip.

With this he becomes expert in throwing stones to a great distance and with much precision. It not only serves as a weapon of defense, but when a sheep or goat wanders off and will not return at his call he will drop a stone near it, and this at once has the desired effect.

With such a simple weapon, and a stone taken from his shepherd's bag, which was undoubtedly similar to the one above described, it will be remembered the stripling David, while still caring for his father sheep, encountered Goliath, the Philistine giant, and slew him† (see page 280).

When the owner of a flock has no son to care for the sheep, he hires a shepherd, and not only feeds him, but supplies a stipulated amount of clothing and shoes. The wages paid in money amount to only a few dollars a year.

It is not uncommon for a shepherd or a plowman thus serving a master to receive, instead of wages, one of the man's daughters as a wife, just as Jacob contracted with Laban for his two daughters, Leah and Rachel.* The usual time served for a wife is from five to seven years.

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* Eccl. 2:5.

† 1 Sam. 17:40, 49.

PRIMITIVE METHODS OF DAIRYING

As long as the flocks are kept in the village, the sheep, as well as the goats, are milked by the women, and the milk turned into cheese and butter, to be sold in the city markets.

Butter is made in a goat skin like those used for carrying water. This is only half filled with the milk, which previously has been allowed to sour. The skin is blown full of air, the opening tied up, and it is hung on a tripod of sticks and shaken back and forth by one or two women until the butter is formed (see page 312).

We have no record of how the ancient shepherds of this land made their butter, but could it have been by a cruder or more primitive process? This butter is quite white, and is not eaten, spread on bread, as with us, but is mostly converted into a cooking requisite by boiling until all the watery parts have evaporated, when it is stored in goat skins, and keeps indefinitely.

Fresh butter is also eaten served in a bowl, with usually a quantity of sugar, honey, or molasses made of grapes added,† in which each dips their morsel of bread.

During the day each shepherd pastures his flock independently, but in the evening all meet at the selected rendezvous. It may be a large open field or a spot where they are protected from the wind. Here all the flocks intermix in one great company during the night.

The shepherds arrange among themselves for a watch, each set of four or five men keeping guard for an hour or two, while the rest sleep curled up in their sheepskin. Sometimes they stand like sentinels over the sheep in the solitude of the still, starlit night, just like the shepherds of old on the first Christmas eve.

CALLING THE SHEEP BY NAME

Those unacquainted with the pastoral life of this land, who do not know the almost human relationship between the flocks and their keepers, may wonder how the sheep are separated by their different owners when morning comes.

The sheep respond to the voice of their own shepherd, but, so well do they know the individual members of the flock of which they are part, that when the morning breaks each flock gathers itself together as a matter of habit. Then the shepherds start off in different directions, each calling his own sheep, sometimes standing on a rock or elevated place, and the sheep prick up their ears and look around, and seeing their shepherd, follow him because they know his voice.

The shepherd, to make sure that none is left behind, causes his flock to pass under his rod between him and a rock, and as they pass he counts them.‡

As a rule, when the shepherd calls one by its name it will answer with a bleat or come running expecting a treat, as a bit of bread from his scrip or a twig of leaves broken from a tree.

Each shepherd carries a club or crook, and uses it for defense and protection and not, as in other countries, to drive the sheep with, for here the shepherd always precedes the flock and they follow him. In case of danger, such as the intrusion of some wild animal, the sheep rush to him, and this weapon on his shoulder seems to allay their fears, reminding one of the words, "Thy rod and thy staff they comfort me." §

To know these shepherds is to understand how the Shepherd Psalmist and King, contemplating all the incidents and vicissitudes of his pastoral life, could compose that matchless psalm, of such solace and strength, "The Lord is my shepherd, I shall not want." ¶

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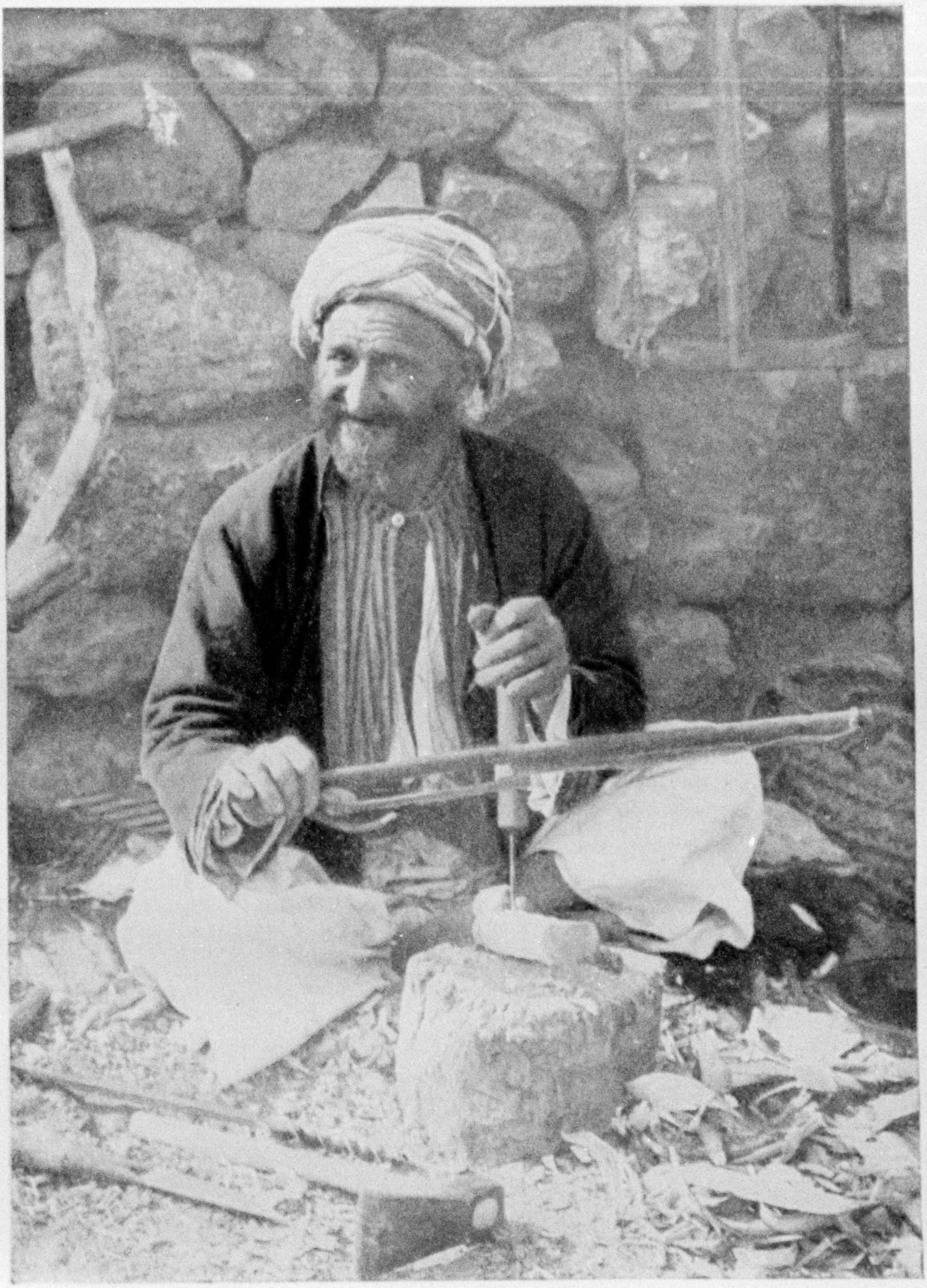
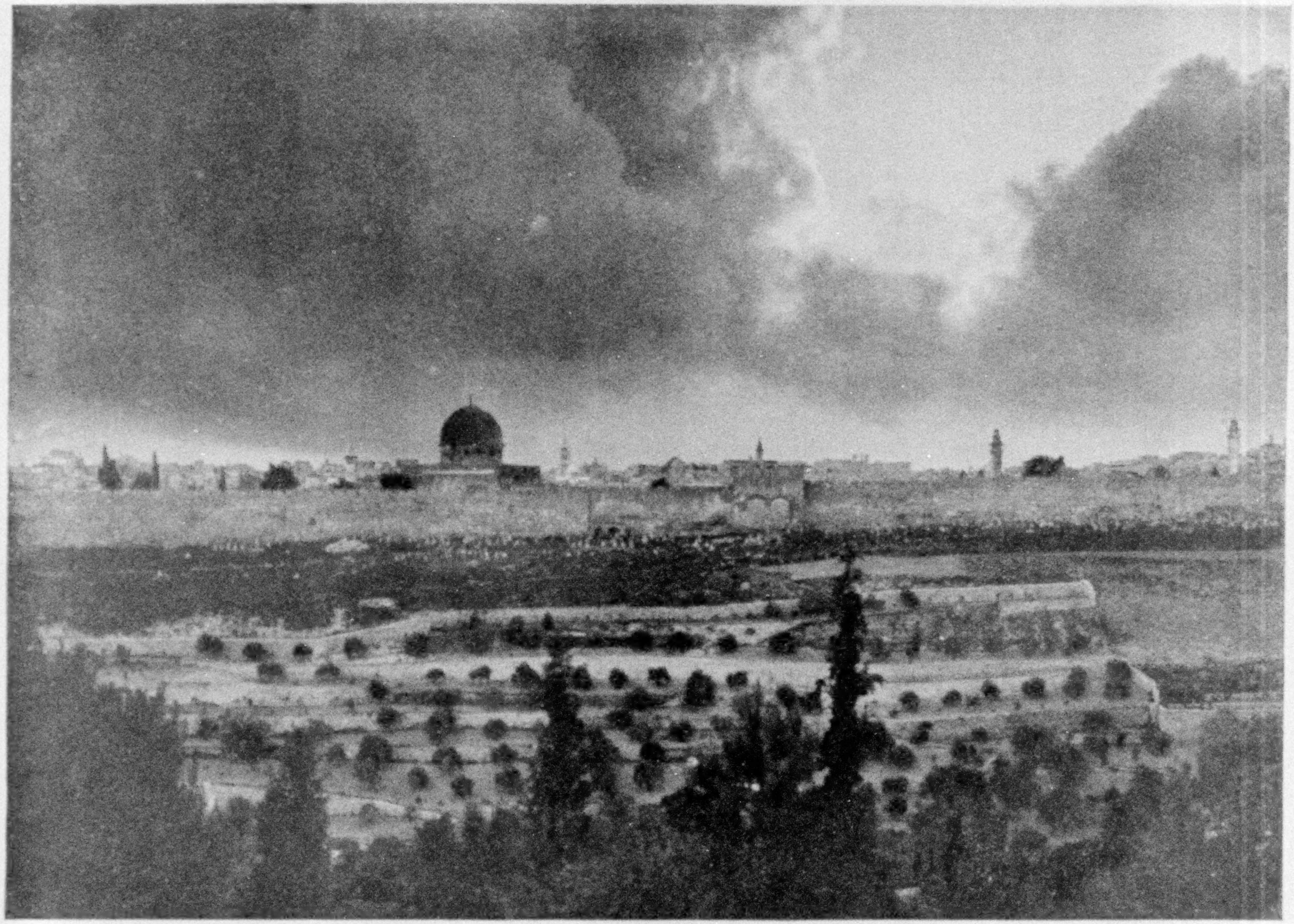
* Gen. 29: 15-29.
† Isaiah 7: 15, 22.
‡ Lev. 27: 32.
§ Psalm 23: 4.
¶ Psalm 23: 1.



THE VILLAGE CARPENTER

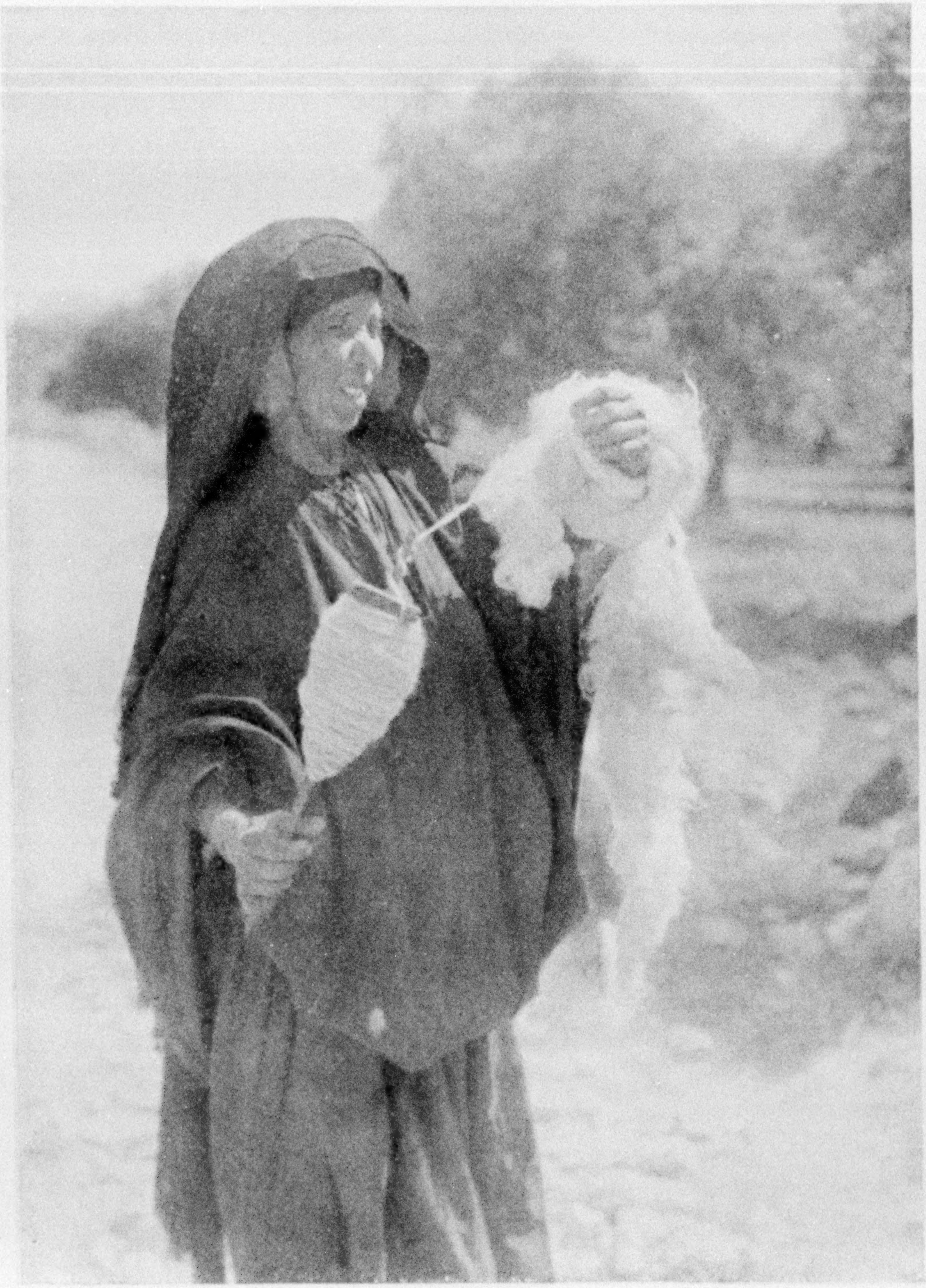
Each village in Palestine has a carpenter who repairs the ploughs and receives in exchange from each farmer a stipulated amount of grain. Note the primitive tools and the great toe used to hold the wood. Photo by American Colony, Jerusalem.

XUM



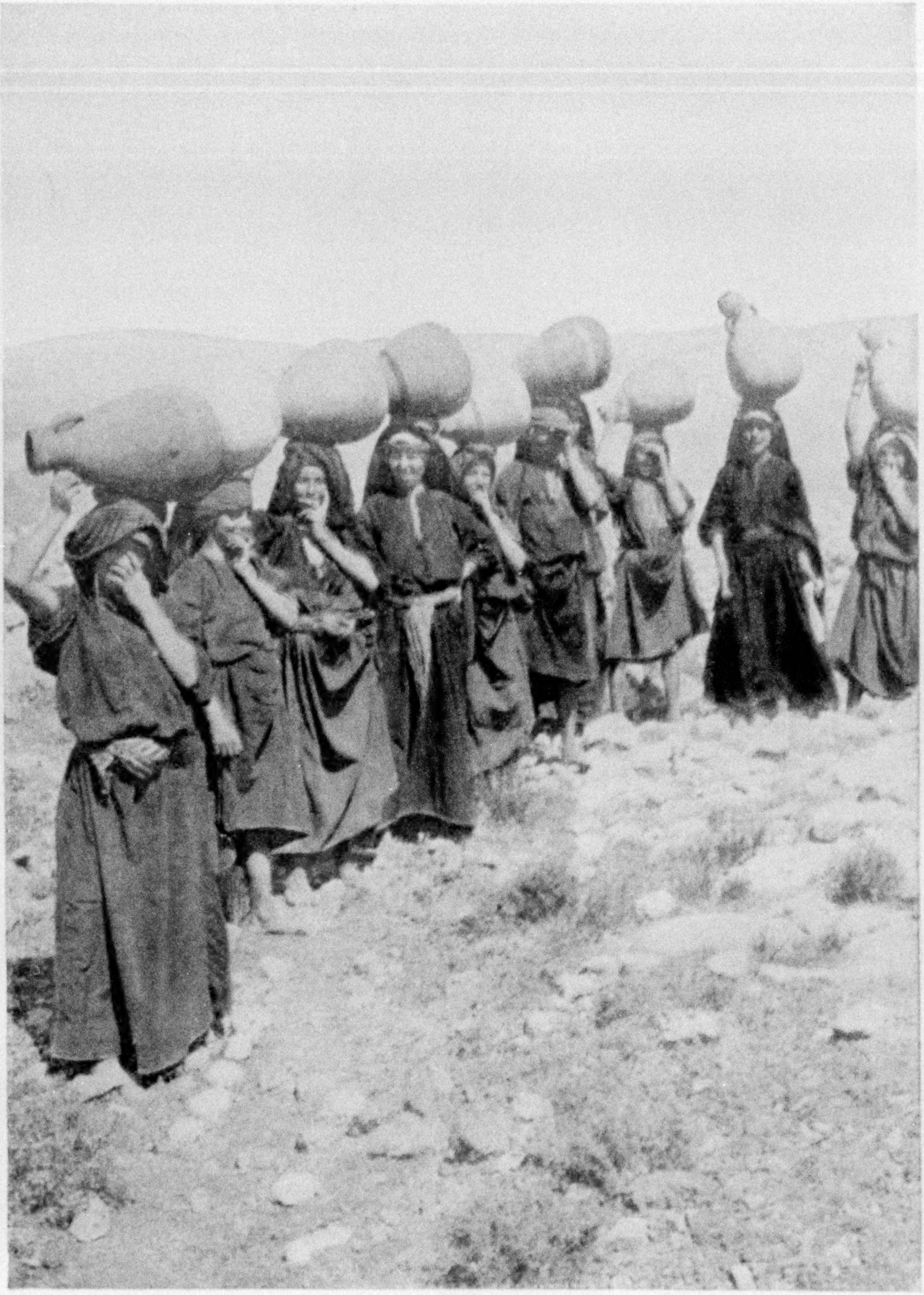
JERUSALEM IN A WINTER STORM

The great dome, which stands out so prominently, is that of the Mosque of Omar, which covers the site of the threshing floor of Ornan, the Jebusite. (See also page 305.) This is one of the most sacred spots in the world, the place where Abraham was ready to offer up Isaac; where David sacrificed to stay the plague and where Solomon built his great temple. The Mosque of Omar ranks among the Moslems as second only in sanctity to the Kaaba at Mecca. Photo by American Colony, Jerusalem.



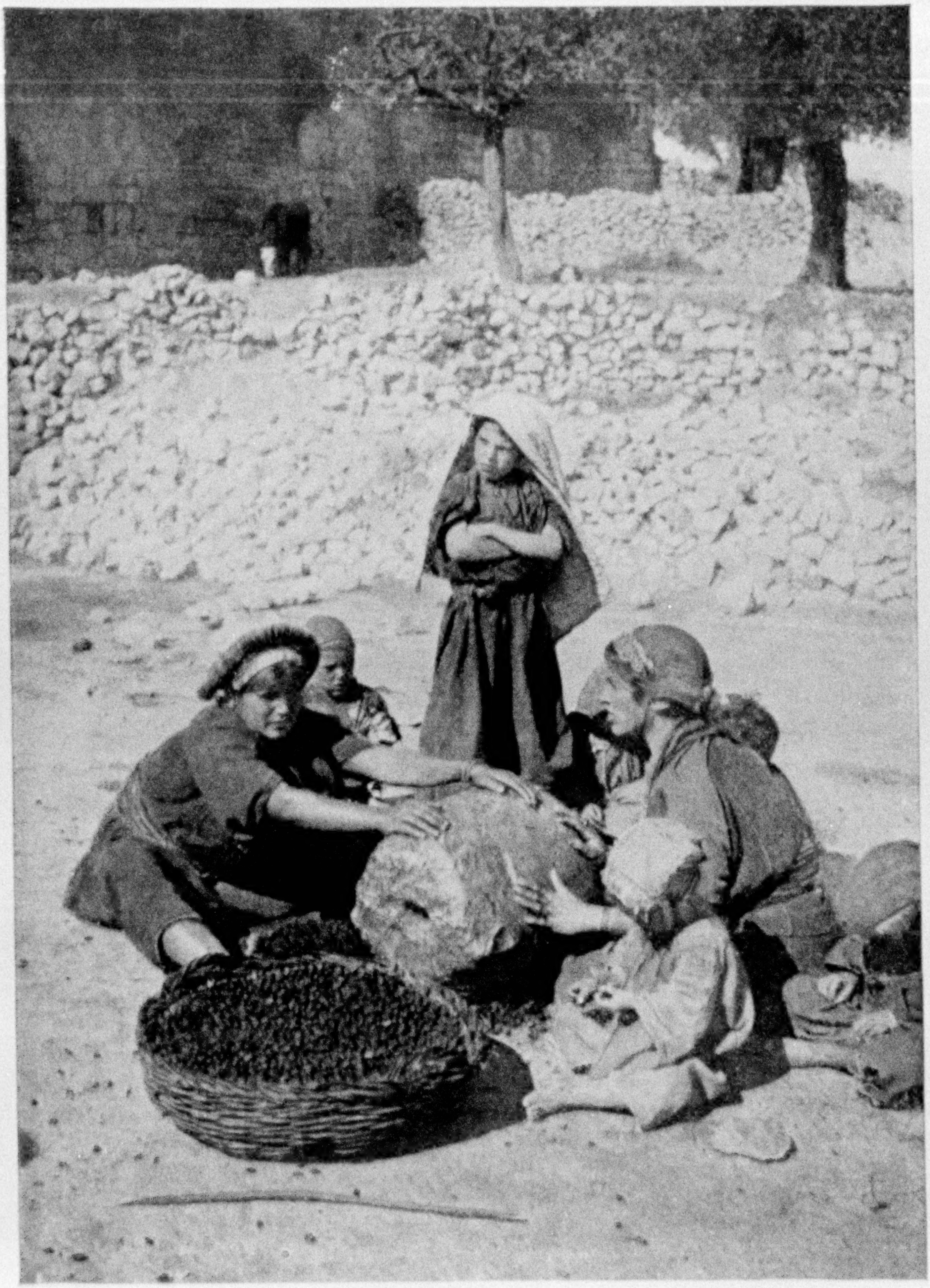
THE SPINNING WOMAN

This woman belongs to a class like that of the people of Jericho, neither Bedouin nor peasant, but a compound of both. Her costume, like her blood, is a mixture, her dress is Bedouin in character but her head-dress is similar to that worn by the peasant women. Photo by American Colony, Jerusalem.



ON THE WAY TO THE WELL

"Women formerly, when passing men on the roads, would cover their faces with their hands and keep their eyes on the ground, but now when you meet them they are not shy." It will be noted that the woman on the extreme left observes the more modest custom. Photo by American Colony, Jerusalem.



MAKING OLIVE OIL

"A piece of an ancient column serves as a roller, the olives being placed on a rock and crushed by passing this stone back and forth over them." Note the rich blue black color of the ripe olive. Photo by American Colony, Jerusalem.

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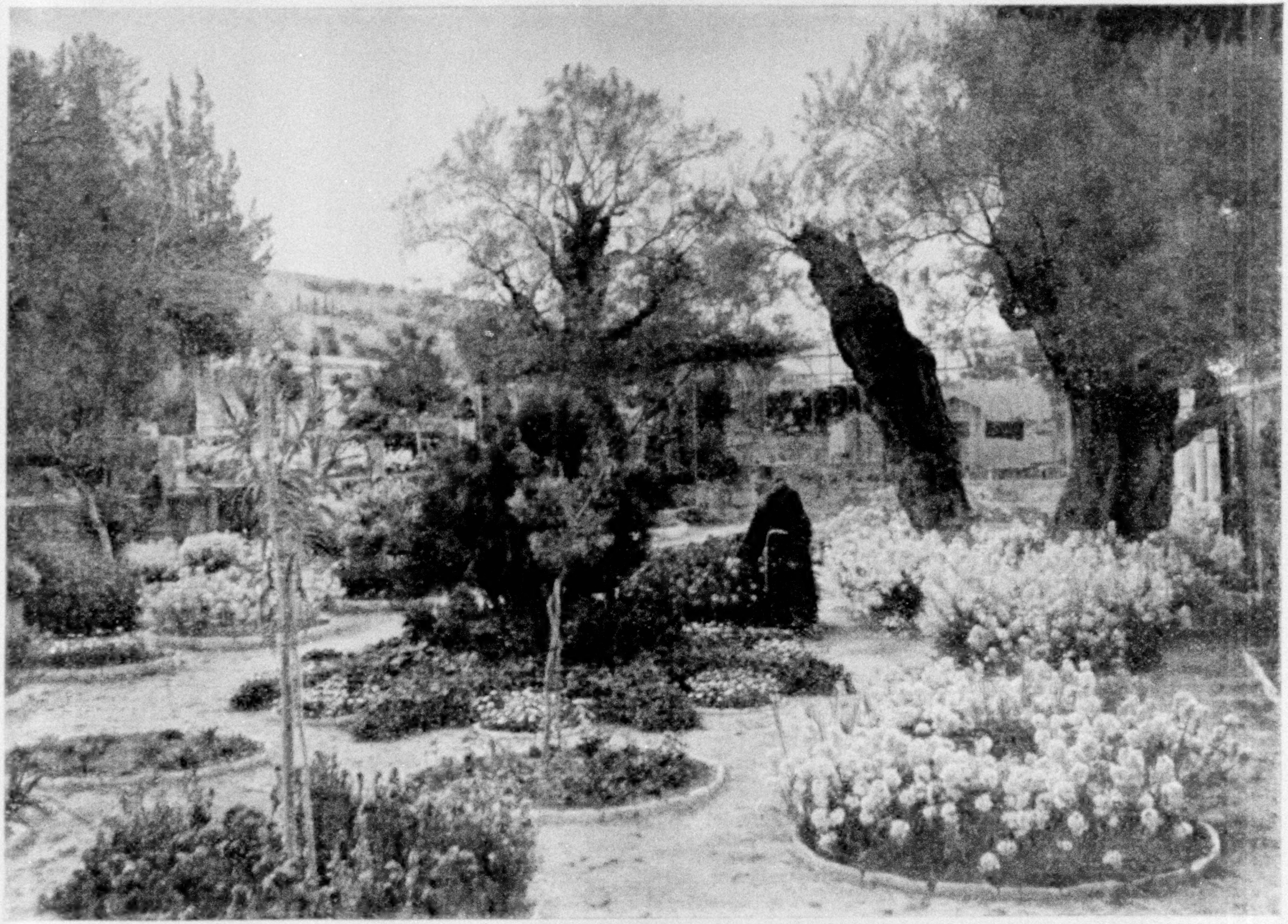
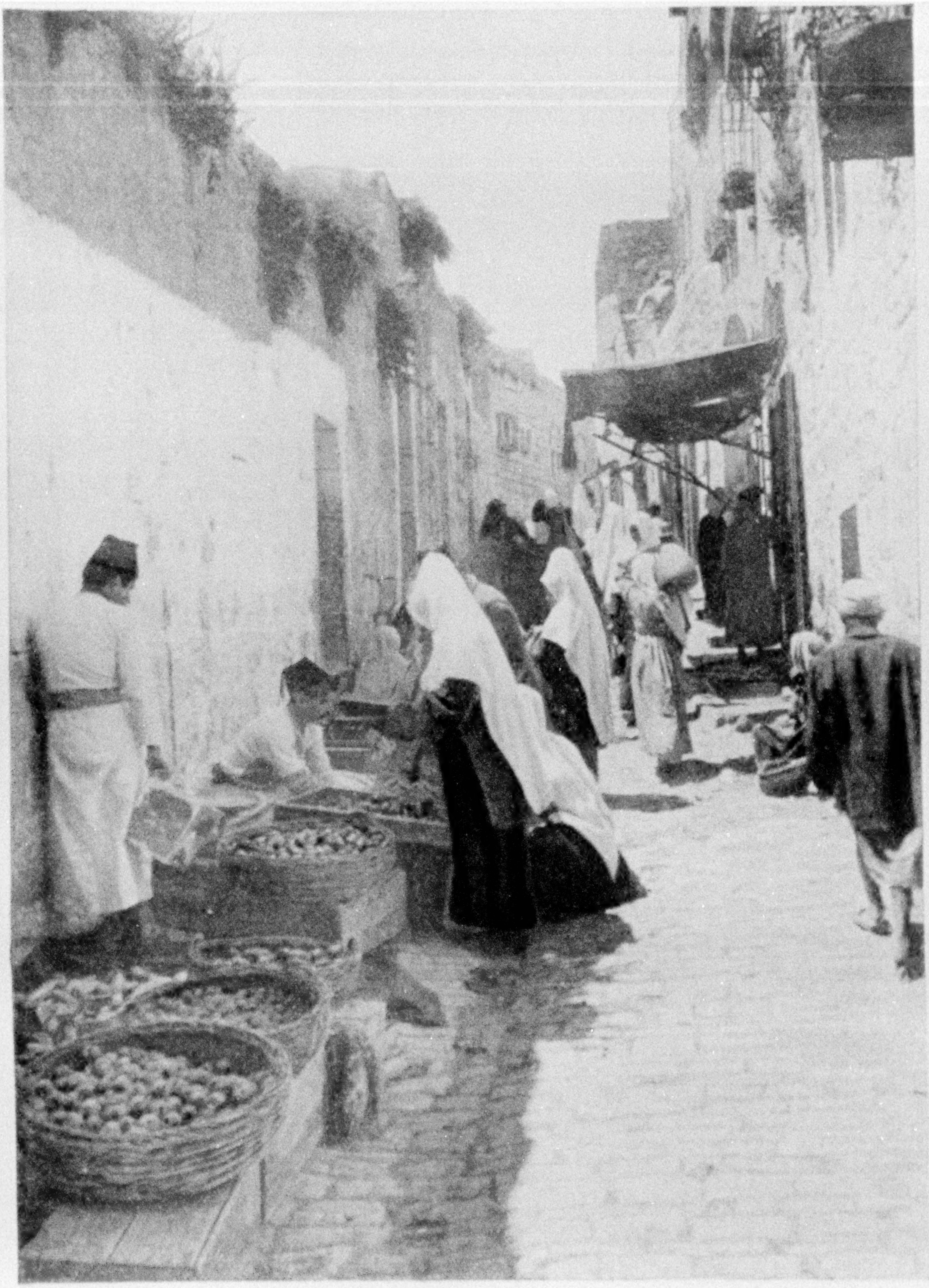


THE GARDEN OF GETHSEMANE

The garden of Gethsemane is now in charge of the Capuchins, an order of Franciscan friars belonging to the Roman Catholic Church. They tend it with the greatest care and it is one of the beauty spots of the Holy Land. It contains a few olive trees of great age, some of which are believed to have been in existence at the time of Christ. Photo by American Colony, Jerusalem.



STREET SCENE IN BETHLEHEM

Bethlehem stands in the midst of a fertile district producing an abundance of wheat, barley, olives, vegetables and grapes and in consequence its market is always well supplied. Since 1834, when the entire Moslem colony was destroyed by Ibrahim Pasha after an insurrection, there have been comparatively few Moslems among its inhabitants. Photo by American Colony, Jerusalem.

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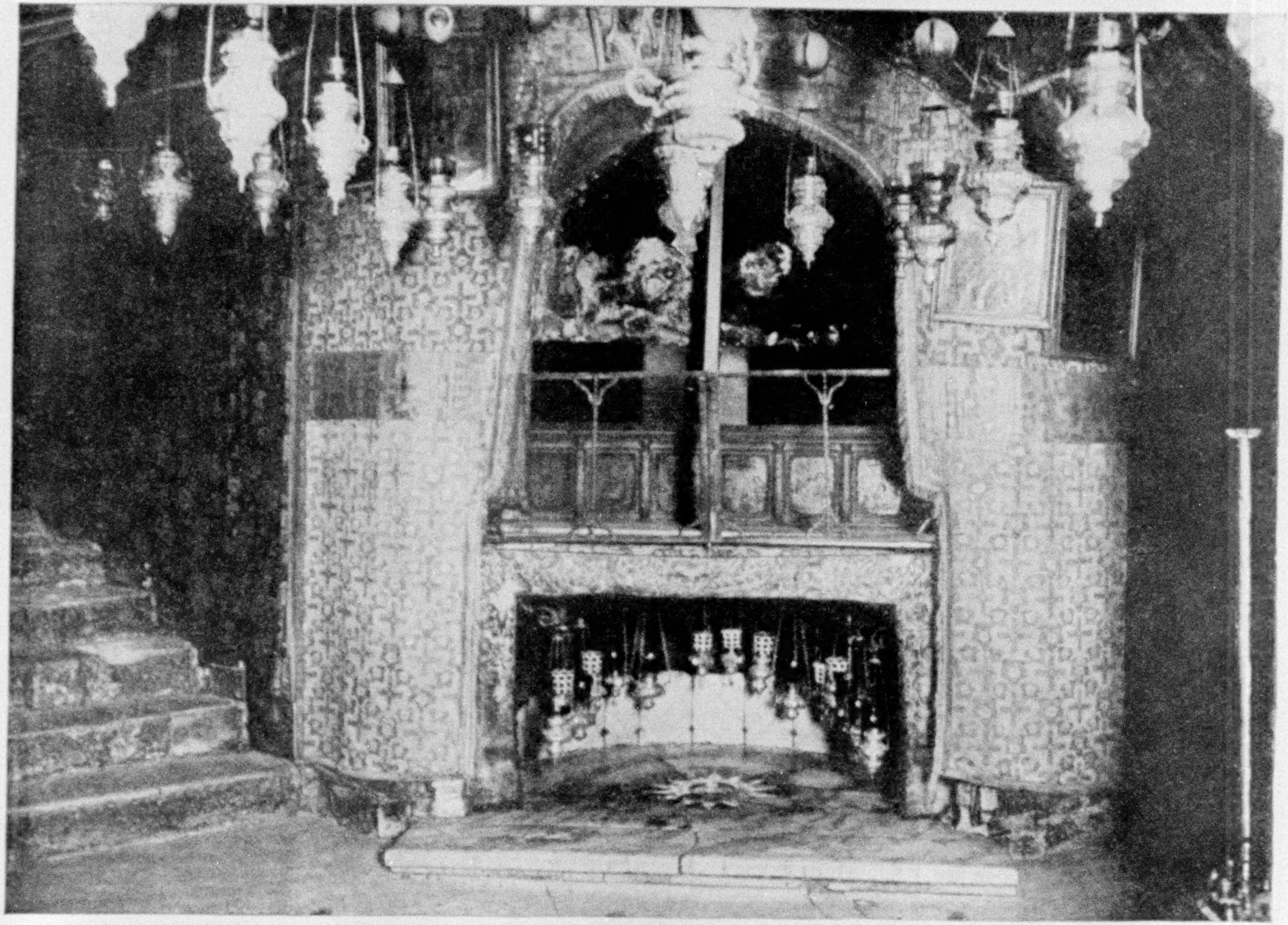
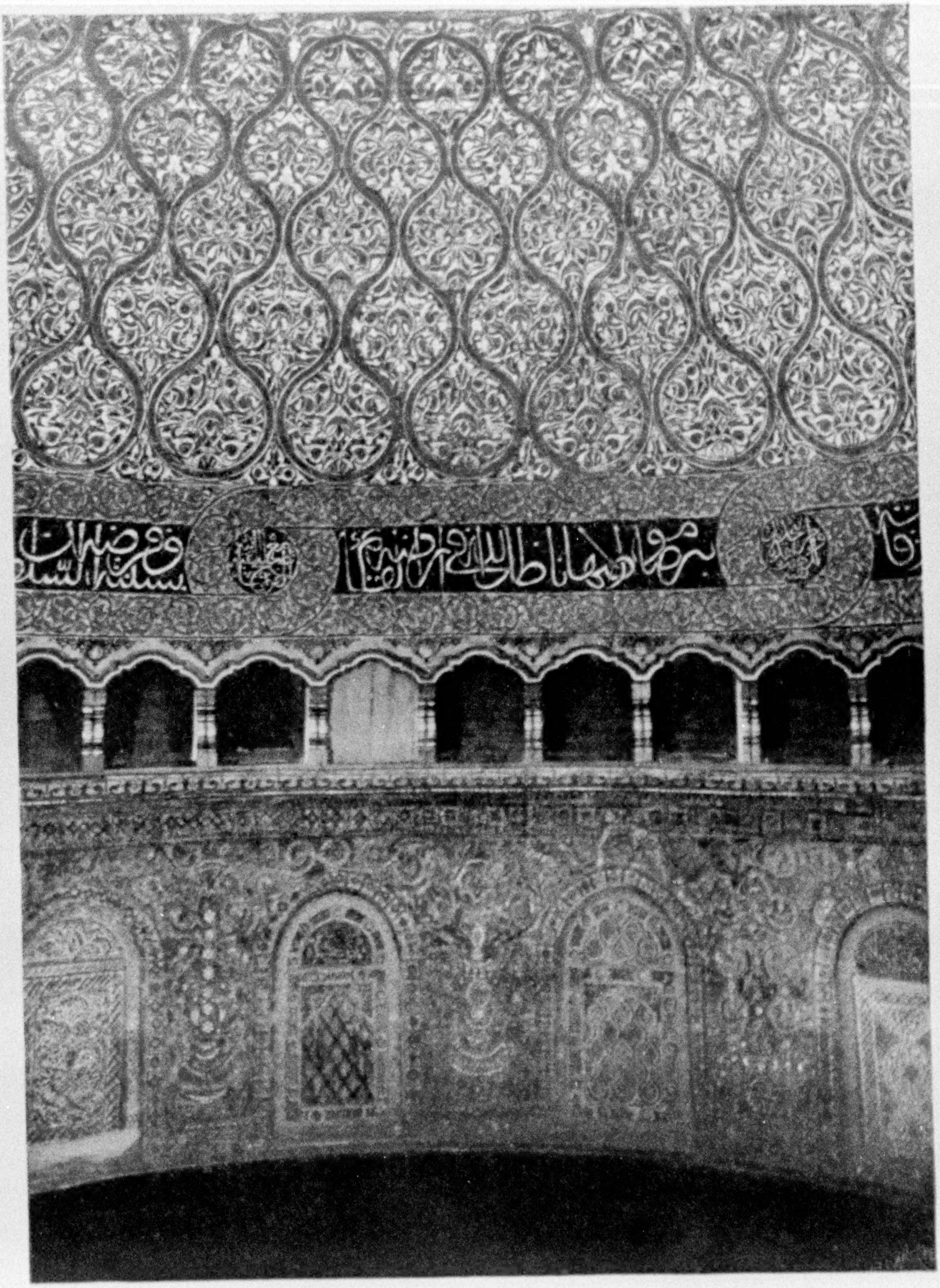


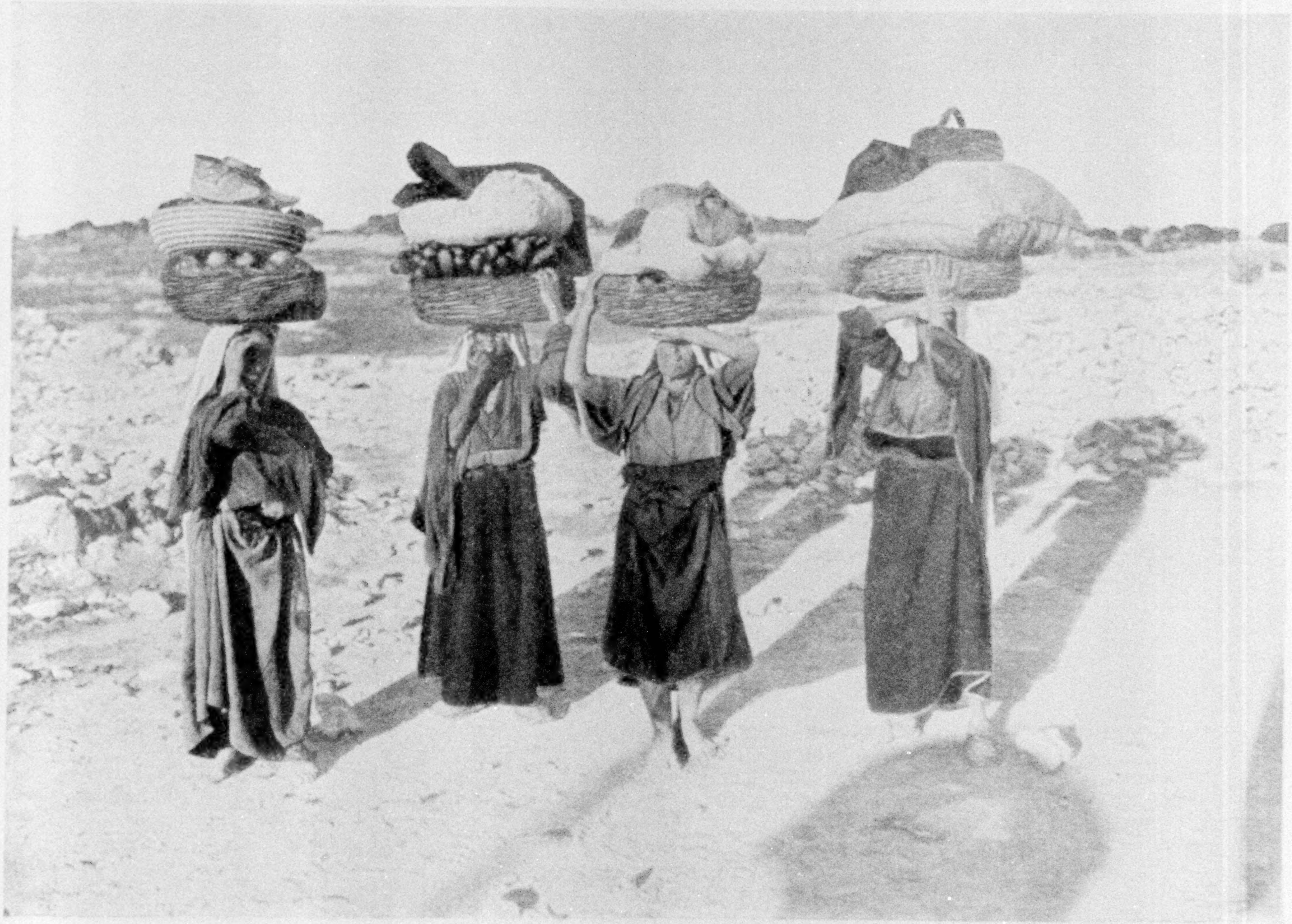
THE GROTTO OF THE NATIVITY

"To-day, in Bethlehem's church, such a cave is shown as the actual birthplace of Jesus. Its walls are covered with costly tapestries and from its ceiling hang lamps of gold and silver." The church over the grotto was built by the Empress Helena, the mother of Constantine the Great.
Photo by American Colony, Jerusalem



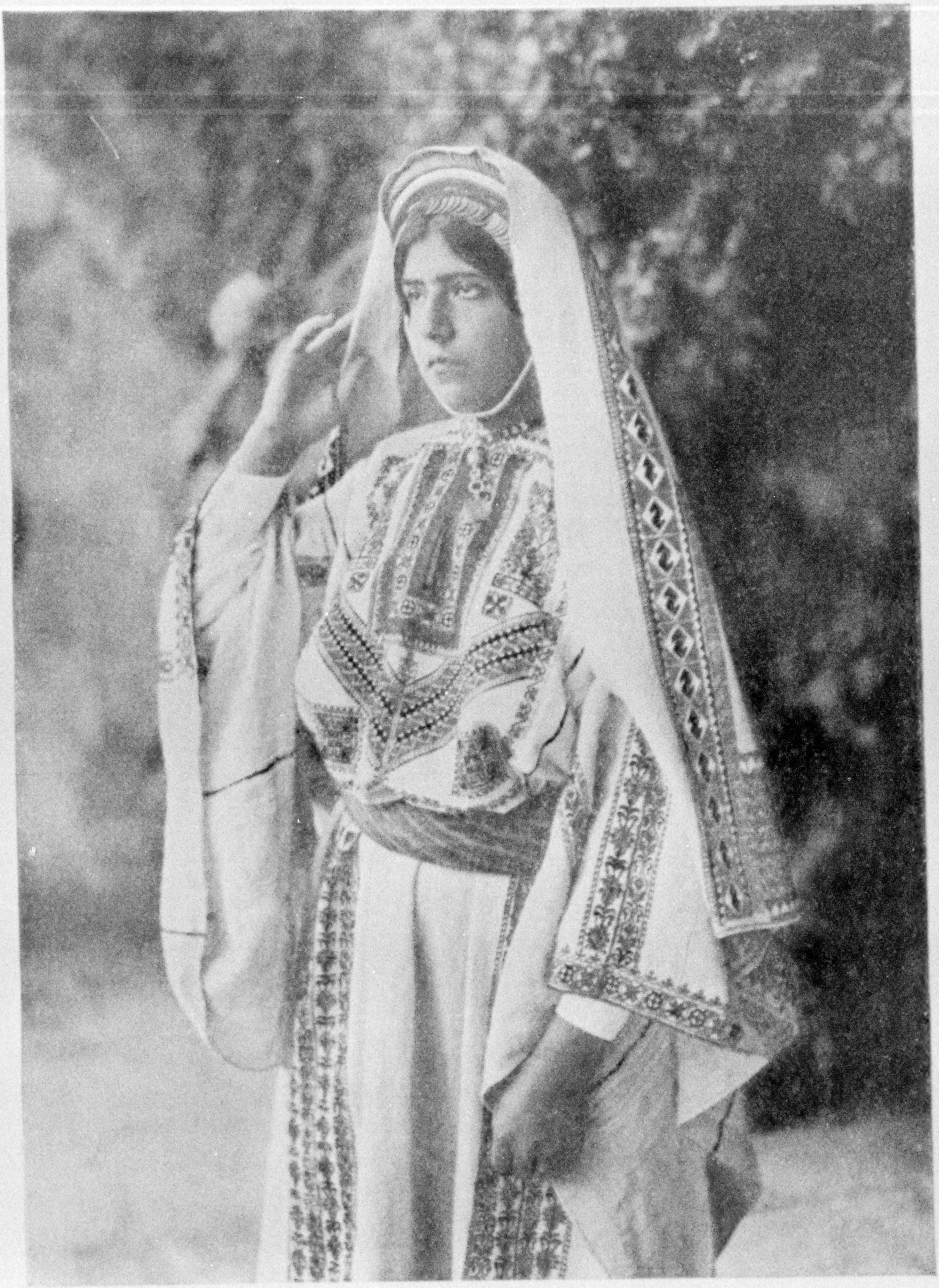
BENEATH THE DOME OF THE MOSQUE OF OMAR

Under this gorgeous dome, with its superb mosaics of Arabesque design, seen only in the subdued light which filters in through the ancient stained glass windows, is a great flat rock, the summit of Mount Moriah, part of the threshing floor of Ornan, the Jebusite. I Chron. xxi and xxii. (See also page 298.) Photo by American Colony, Jerusalem.



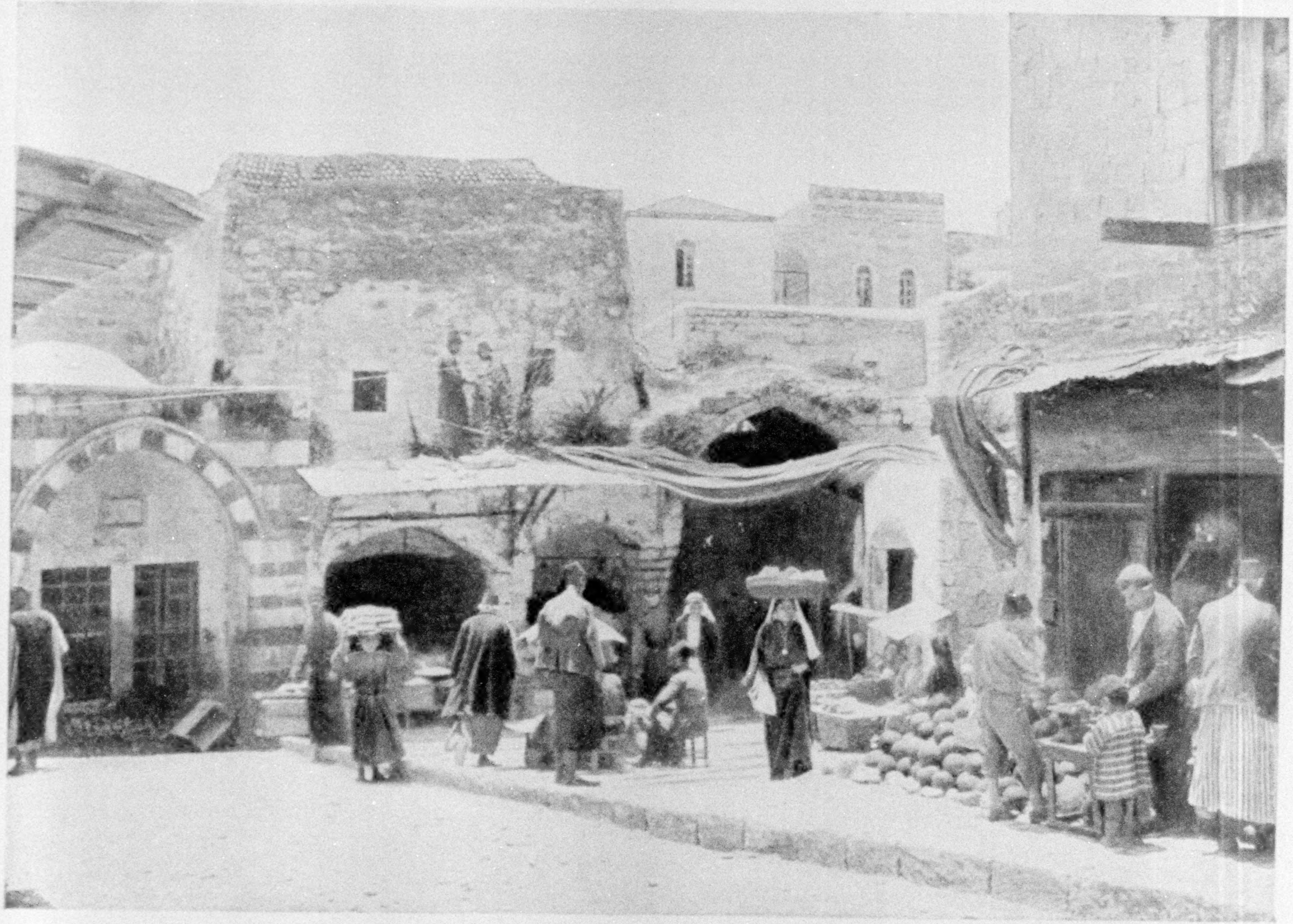
ON THE WAY TO MARKET

Like all Orientals these peasant women carry their produce to market on their heads. It is a common custom with them to take off their shoes and place them on top of their loaded baskets. The woman on the left is practising this form of economy. Photo by American Colony, Jerusalem.



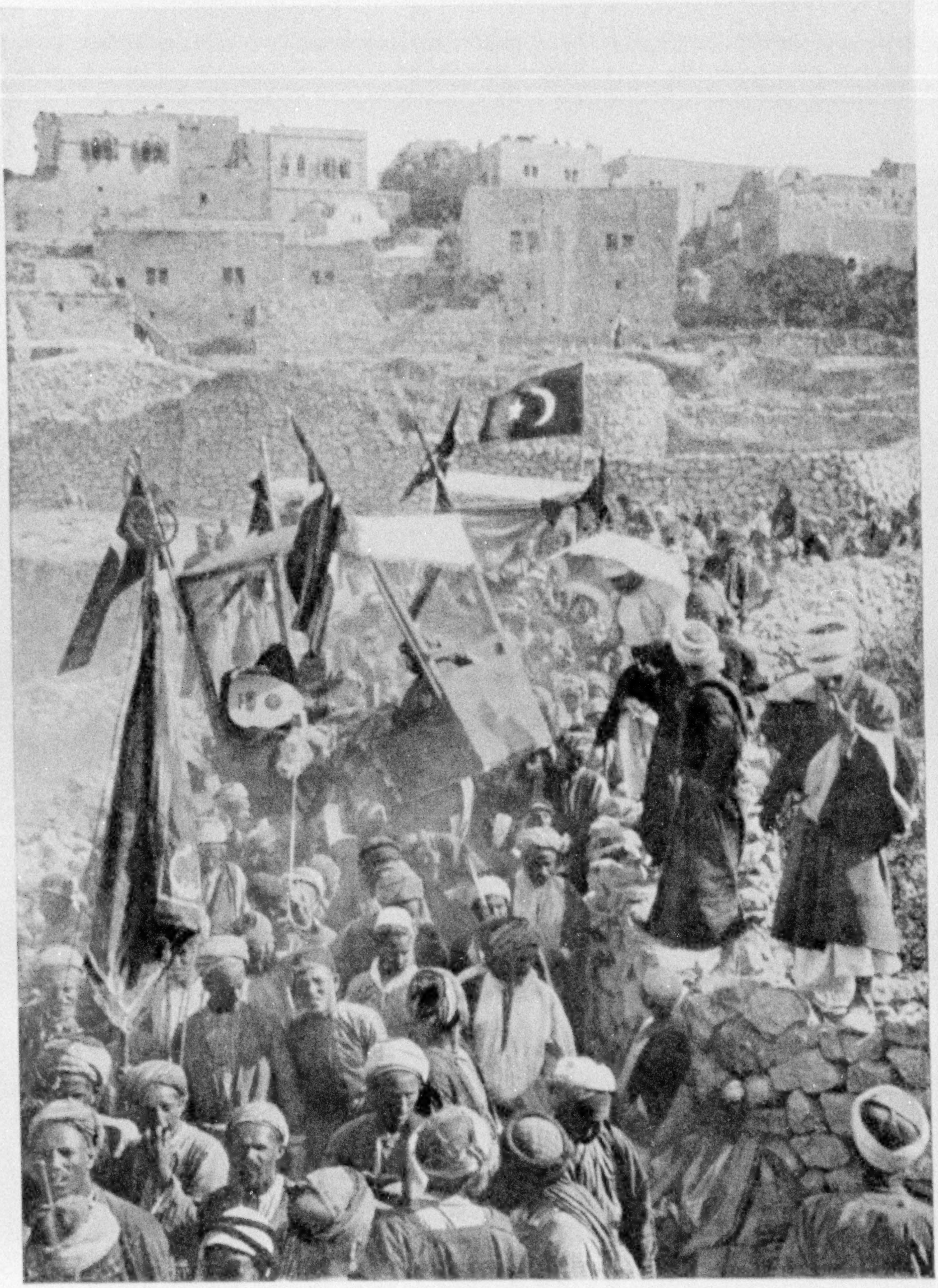
THE BRIDE, PALESTINE

She is wearing her wedding dress, the white embroidered garment known as the *tobe*, and the large white veil to match,—the embroidery being all the work of her own hands. The head-dress of coins and the neck chain,—the marks of a married woman—are formed from a part of the money which her father received for her from the bridegroom. The average price of a bride is from $20 to $40. Photo by American Colony Jerusalem.



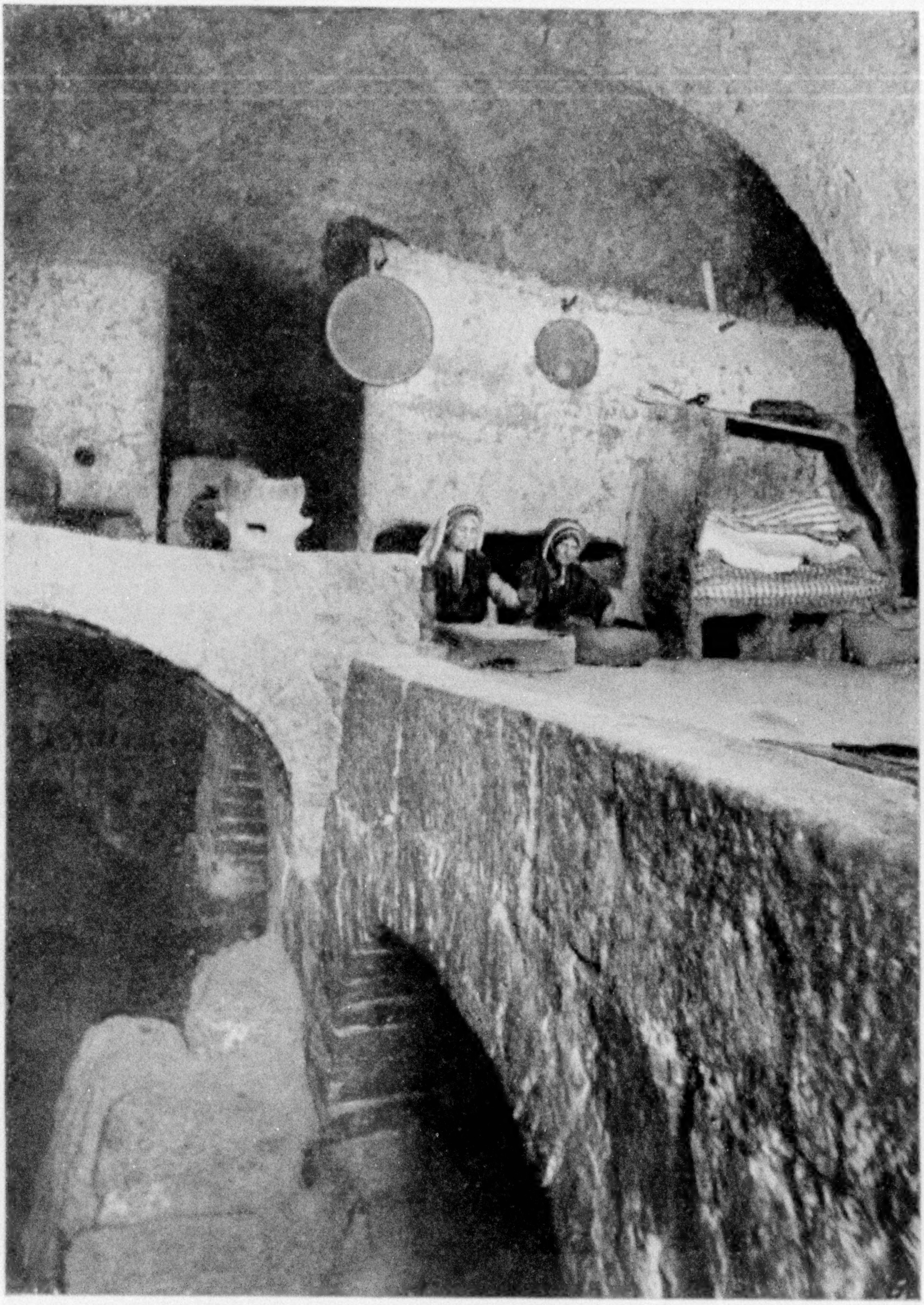
IN A JERUSALEM MARKET

This market, known as the *Bab-khan-el-Zeit*, is the chief one in the old Moslem Quarter. The different faiths and races in the Holy City dwell more or less apart and each patronize separate markets. Photo by American Colony, Jerusalem



THE VILLAGE WEDDING

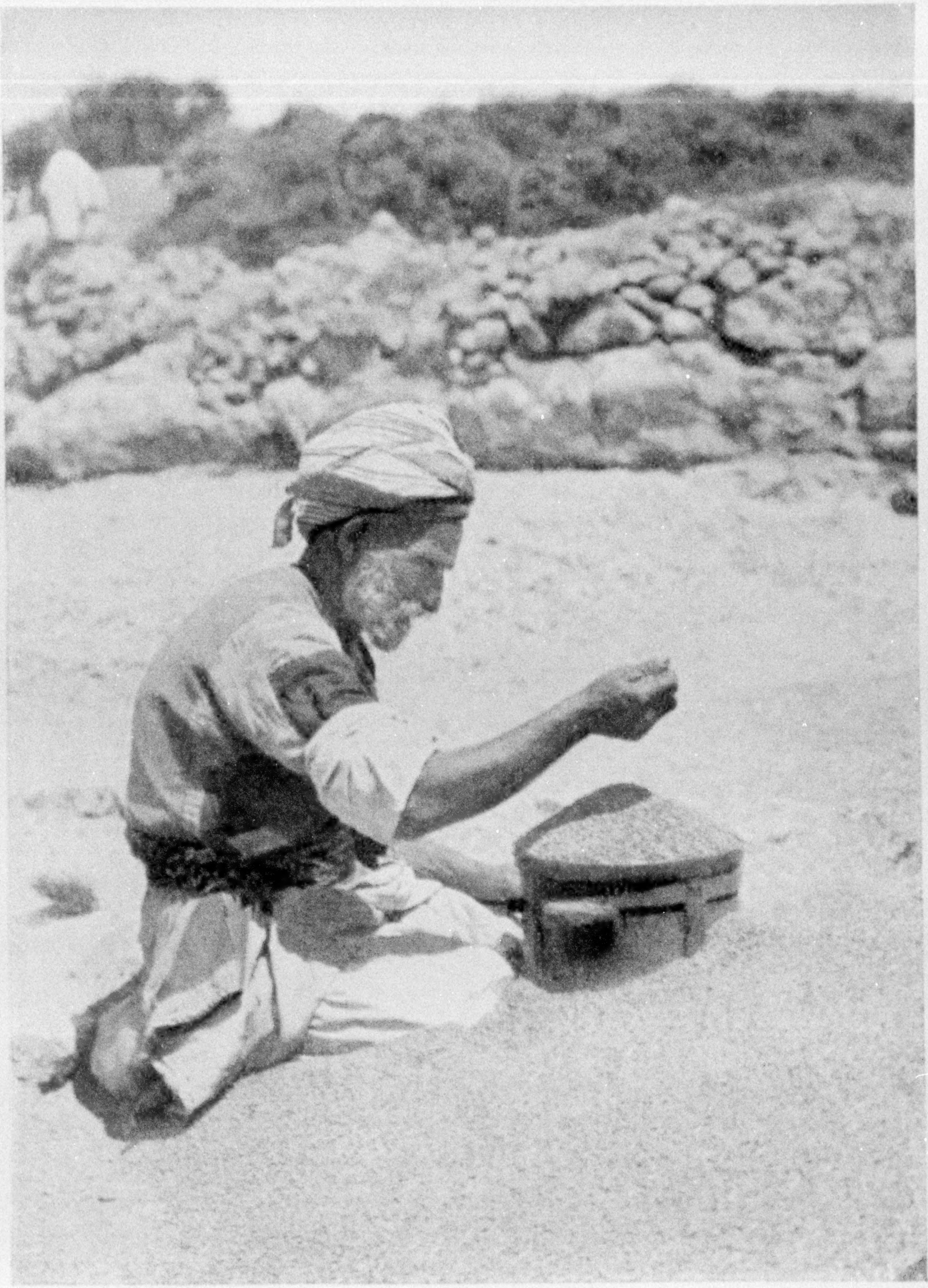
"Towards evening the young men dress the bridegroom in his best and, with the entire village, go out into some open field where they have horse-racing and shooting." Note the palanquins on the camels from which the ladies of the family watch the festivities. Photo by American Colony, Jerusalem.



THE UPPER ROOM

"To make use of the *rowyeh*, or stable portion of the house, by human beings is not the exception but an every-day occurrence. . . . Many of these dwellings, placed as they are on ancient sites, are built over old caves or caverns which are incorporated with the lower or stable portion." (See text.) Photo by American Colony, Jerusalem.

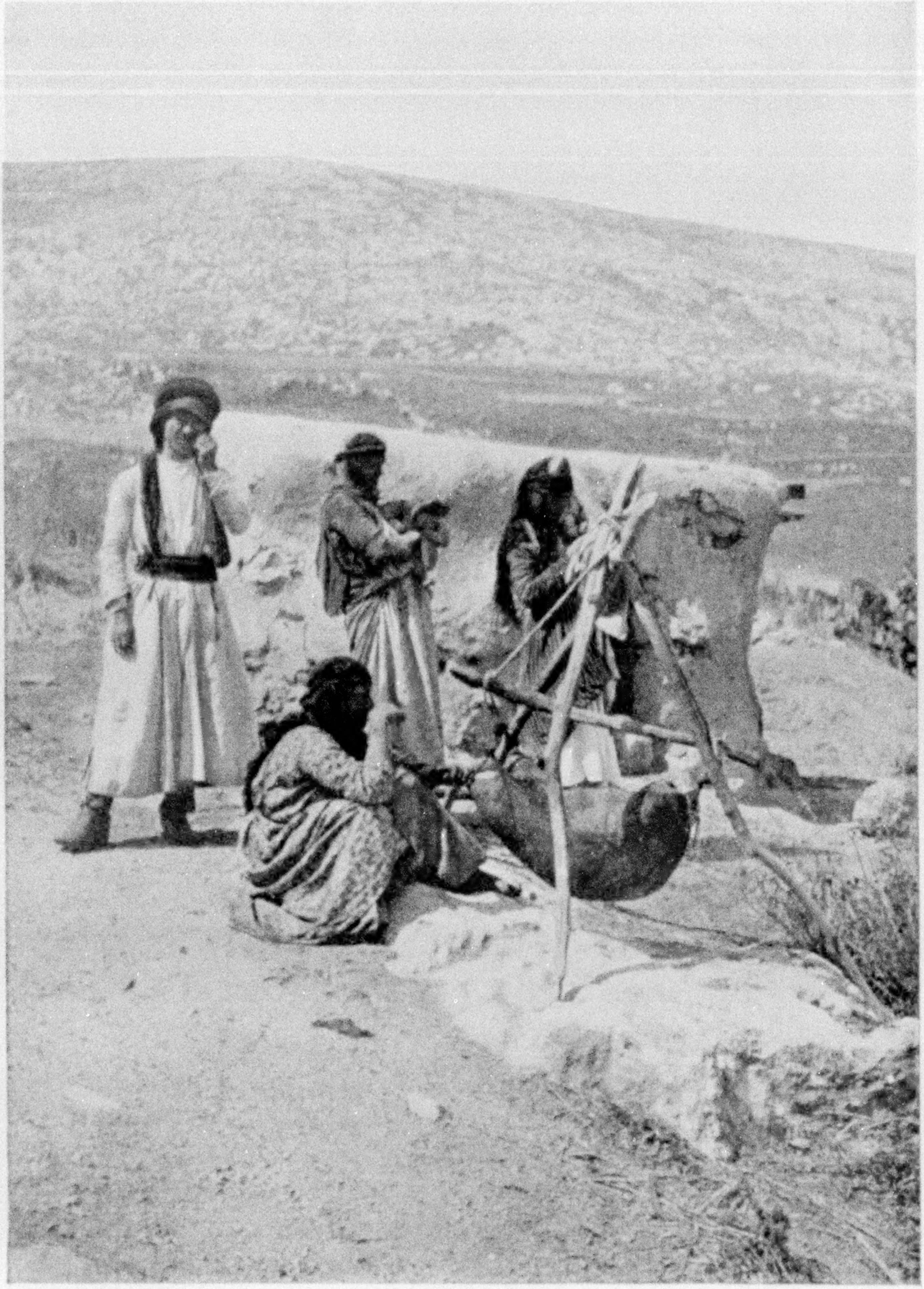
XUM



MEASURING THE GRAIN

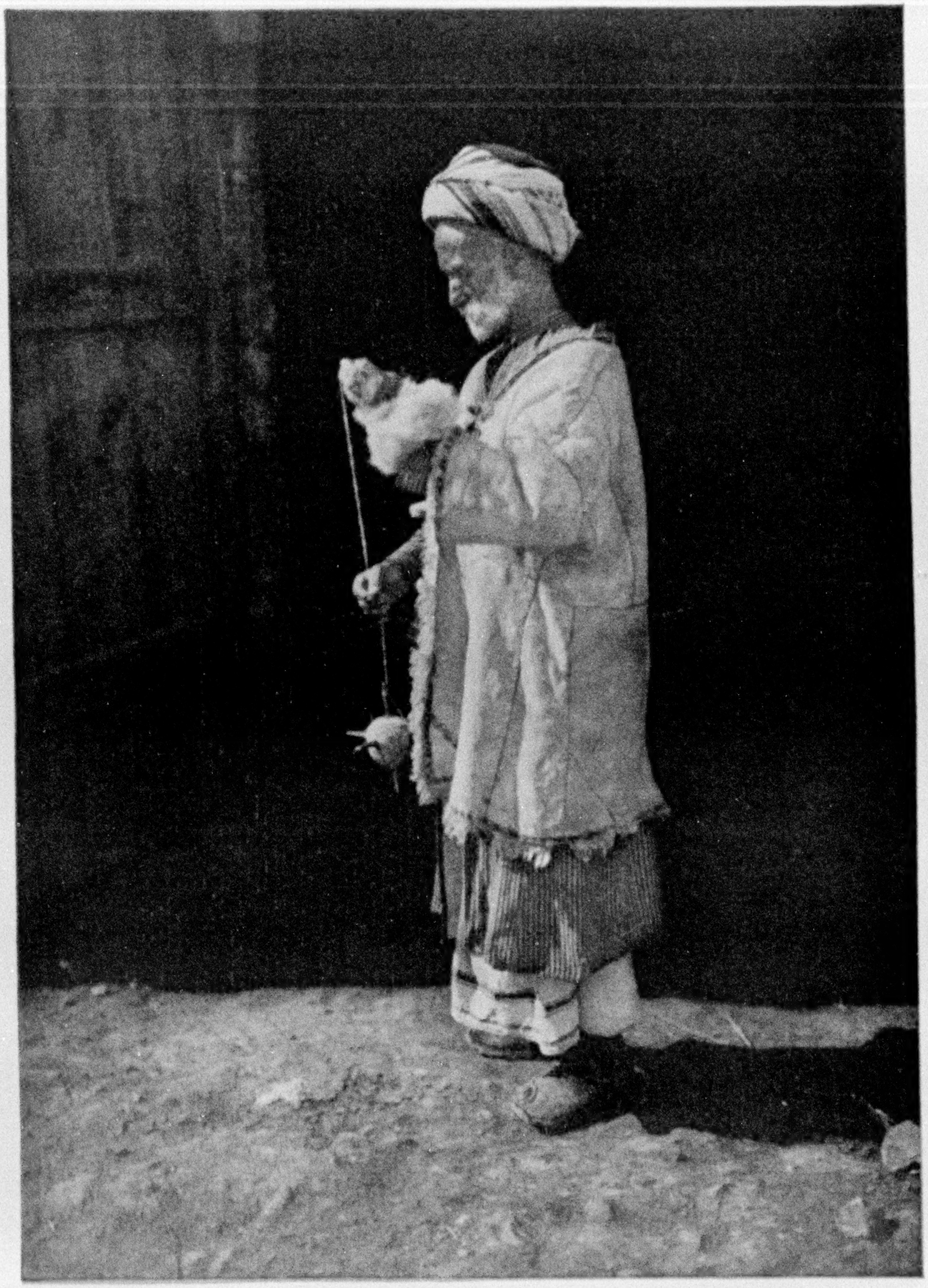
This is one of the scenes of the threshing floor, as primitive to-day as it was in the Biblical period 2000 years ago. It helps us to understand the phrase, "good measure, pressed down and shaken together and running over." Luke vi: 38. Photo by American Colony, Jerusalem.

XUM



MAKING BUTTER

Butter-making in the Holy Land is a very primitive affair. A goat's skin is half filled with milk, then inflated with air and sealed. It is hung with ropes on a tripod roughly made of sticks and is rocked to and fro by the women until the butter is formed. Photo by American Colony, Jerusalem.



A TYPICAL VILLAGER'S COSTUME

THERE is a long shirt made of white cotton cloth. Over this is a sort of gabardine made of striped goods; red and yellow or black and yellow are the favorite colors. A dome-like red fez is wound about with a turban. In the districts north of Jerusalem the turban consists of a large square of white linen with a colored border woven in. Photo by the American Colony, Jerusalem.

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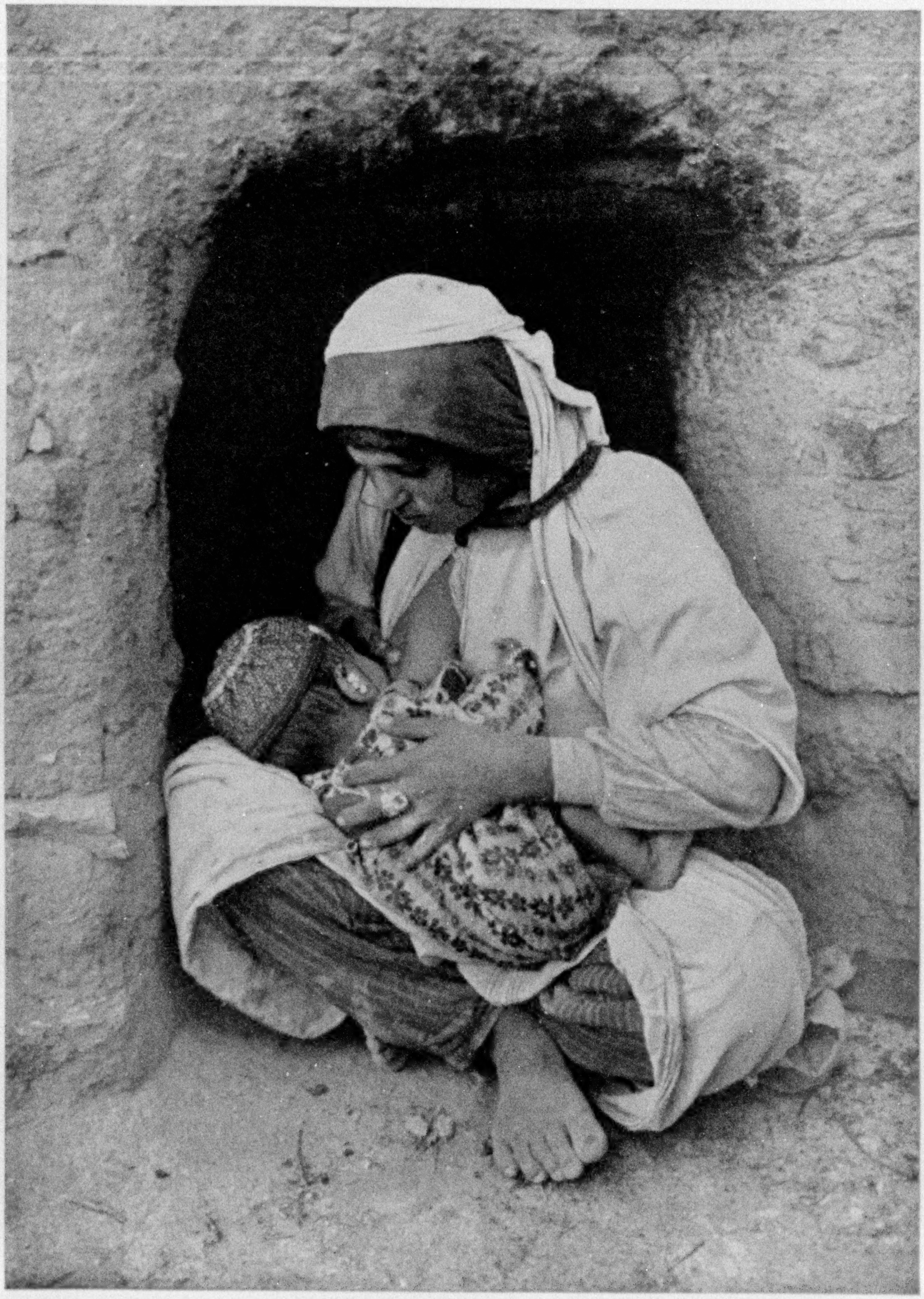

THE VILLAGE MOTHER: PALESTINE

"A cap, perhaps decorated with a blue bead or some charm to keep off spirits and the evil eye, completes its apparel." The child shown here has outgrown the swaddling clothes.

XUM

ENCOURAGING BIRDS AROUND THE HOME

By Frederick H. Kennard

Now that our country has really awakened to the importance of bird life to the citizens, and at last enacted some very wise legislation, forbidding the killing of migratory and insectivorous birds, putting migratory game birds under Federal control, and forbidding the importation of plumage from abroad, public interest in birds and their great economic value seems to have been stirred as never before.*

Spring will soon be here, and those of us who are thinking of doing our little toward attracting the birds must be getting ready for the early arrivals from the South.

Birds come north for the very special purpose of finding a proper place for the rearing of their young, and, this task accomplished, as autumn approaches, soon depart in search of areas where there will be throughout the winter plenty of food and cover and a more congenial climate.

If we want to make our homes attractive to birds, we must always keep the above facts in mind. If in summer we want to attract the migrants from the South, as well as the permanent residents, we must furnish them with proper places for the rearing of their young, which should include not only nesting sites, but cover, food, and water; and if in winter we want to keep some of the permanent residents about our homes and attract migrants from the North, we must remember that they are again in search of food and cover.

Once having attracted the birds, a sharp lookout must be kept in order to protect them from their enemies—cats, bird-hunting dogs, red squirrels, skunks, foxes, and other predatory animals, not forgetting the small boy that used to be ubiquitous; English sparrows, horned owls, and sometimes crows and jays, cooper and sharp-shinned hawks, and last, but not least, the black snake.

HOW TO ATTRACT THE BIRDS

To sum up, if we are to attract birds in summer, we must furnish them with proper nesting sites, cover, food, and also water; and if we want to keep them in winter, we must again furnish them with cover and food, and always protect them from their enemies.†

The most important factor in attracting birds is the supplying of cover suitable for their wants. With this properly done, except in the case of birds that nest about buildings or in holes, nature will supply the nesting sites, as well as take care of the food supply, except in winter.

At "The Pines," my place in Newton Center, Mass., we have had for eight years under close observation about 44 acres, comprising three acres of lawn dotted with a few old apple trees, six acres of wet meadow, which are allowed to grow up with tussocks of grass, cedars, alders, wild roses, and the like, and the remaining 35 acres divided in two areas of about equal size. The first of these areas, that about the house, is covered with a growth of pines, hemlocks, cedars, birches and various other deciduous trees, among which we have taken pains to cultivate suitable coppice and undergrowth, while the second area, covered with deciduous woods, is, on account of a fire that ran through it a number of years ago, almost devoid of the smaller evergreens or protecting coppice and undergrowth (see pages 319 and 320).

In the first of these areas (page 319) some thirty different species of birds

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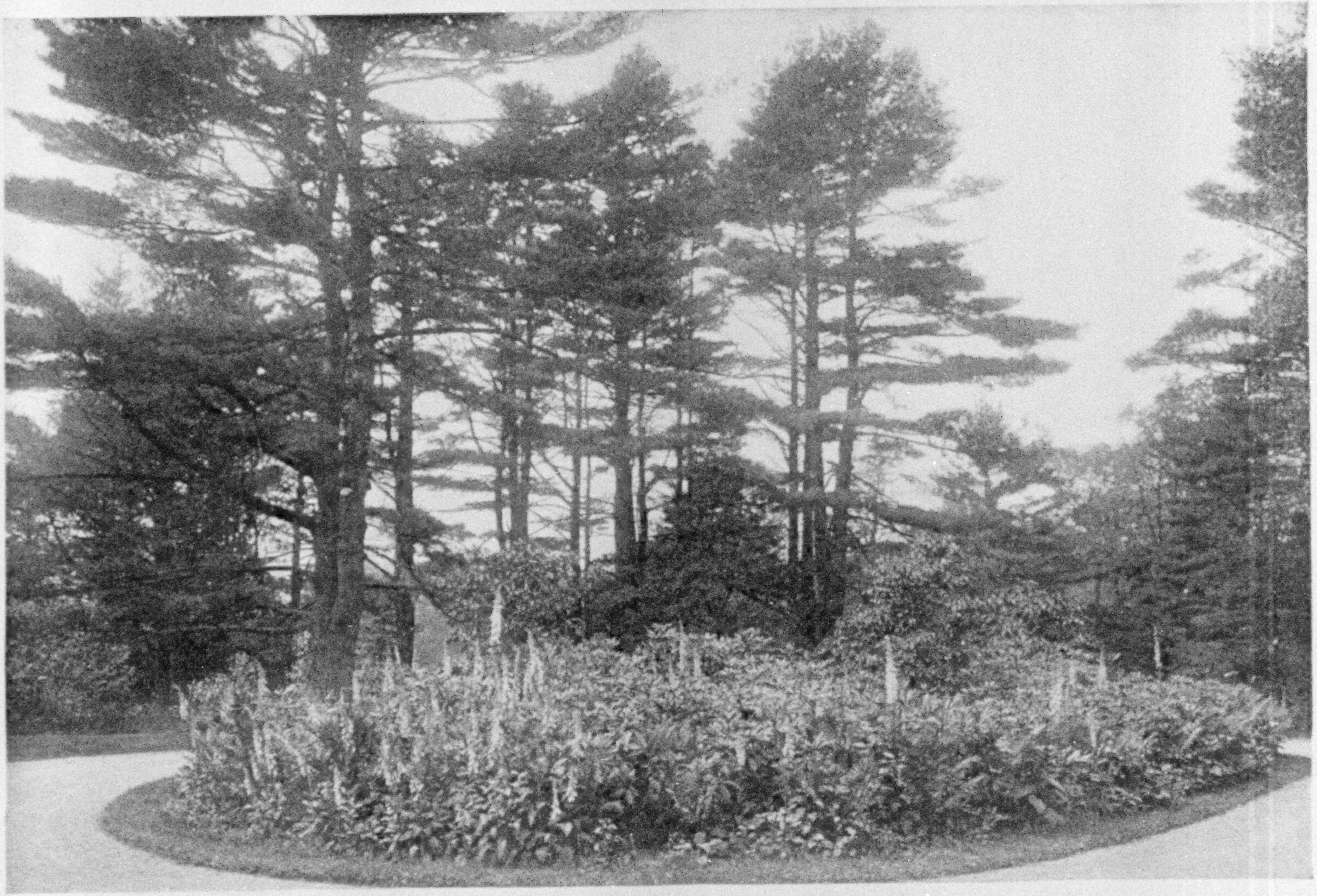
* Numerous reports on the economical value of birds have been issued by the United States Department of Agriculture. One of the best books on the subject is entitled "Birds in Their Relation to Man," by Weed and Dearborn, published by J. B. Lippincott & Co., Philadelphia, Pa.

† A useful book that every one should read who is interested in birds is "Methods of Attracting Birds," by Gilbert H. Trafton, published by the Houghton-Mifflin Co. of Boston, Mass.

ATTRACTIVE PLANTING, PARTICULARLY OF EVERGREENS, ENCOURAGES THE BIRDS

Photo by Thomas E. Marr and Son

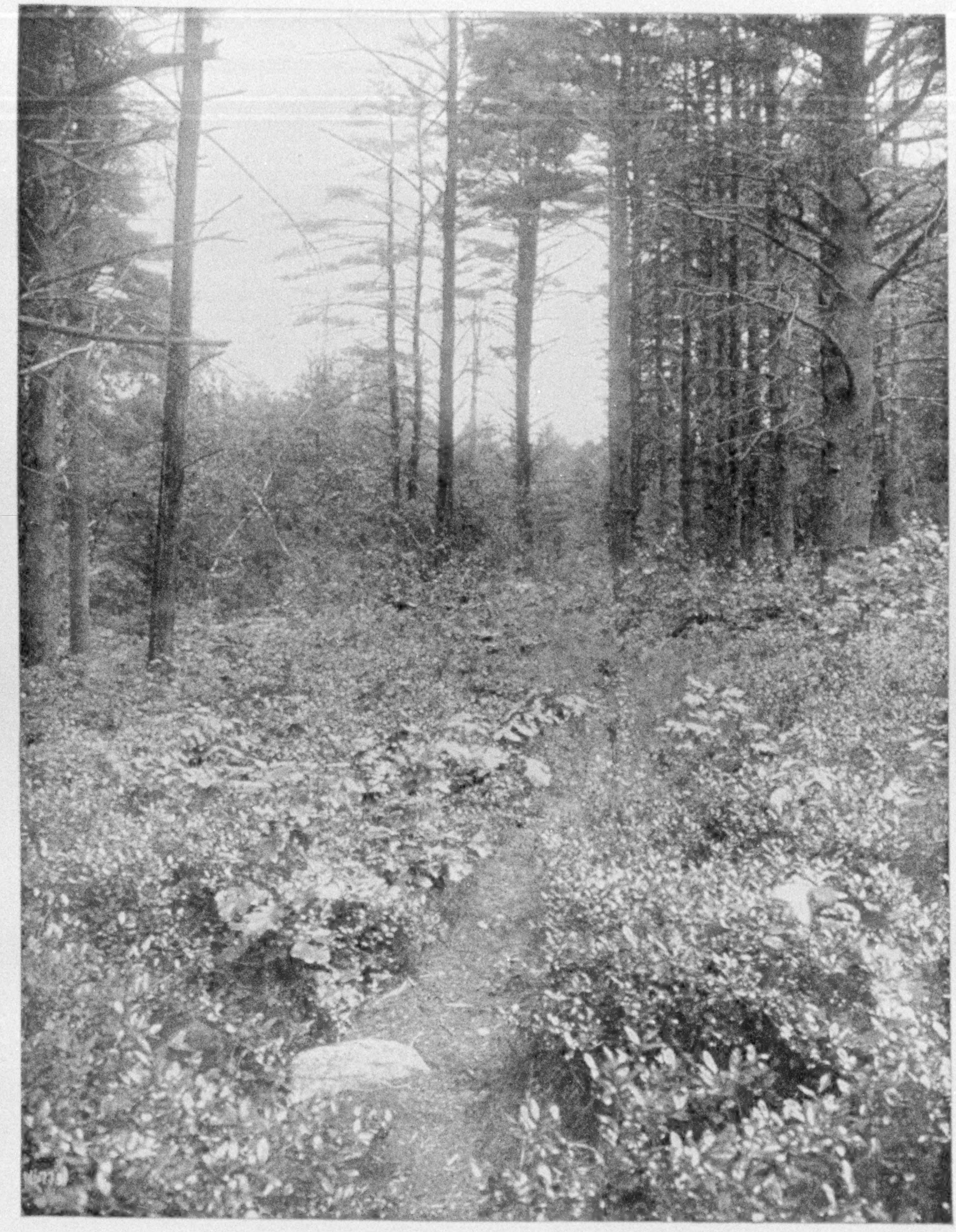
"Almost every one who lives in the country can do something in the way of attractive planting about their houses and grounds, and even in the more closely settled suburbs almost every place, no matter how small, can by judicious planting be made attractive to birds. Even a back yard may in its limited way, with proper treatment, be made a regular rendezvous for birds in the vicinity" (see page 321).



WHERE BIRDS GET FOOD AND PROTECTION

Photo by Thomas E. Marr and Son

A turn of the driveway at The Pines, showing plantation of rhododendrons, flowering dogwoods, and black alders, with an undergrowth of ferns and fox-gloves. Much frequented in summer by catbirds and chewinks, while in winter it affords both food and protection for many winter birds—provided there are no cats about the place.



A BIRD PARADISE

Photo by Thomas E. Marr and Son

A woodland path within a few feet of the residence at The Pines, flanked by undergrowth, ferns, blueberries, huckleberries, dogwoods, etc. Along this path a ruffed grouse builds its nest, as do also chewinks, black and white creepers, and oven birds, while in the trees pine and black-throated green warblers, bluejays, and robins also build their nests.

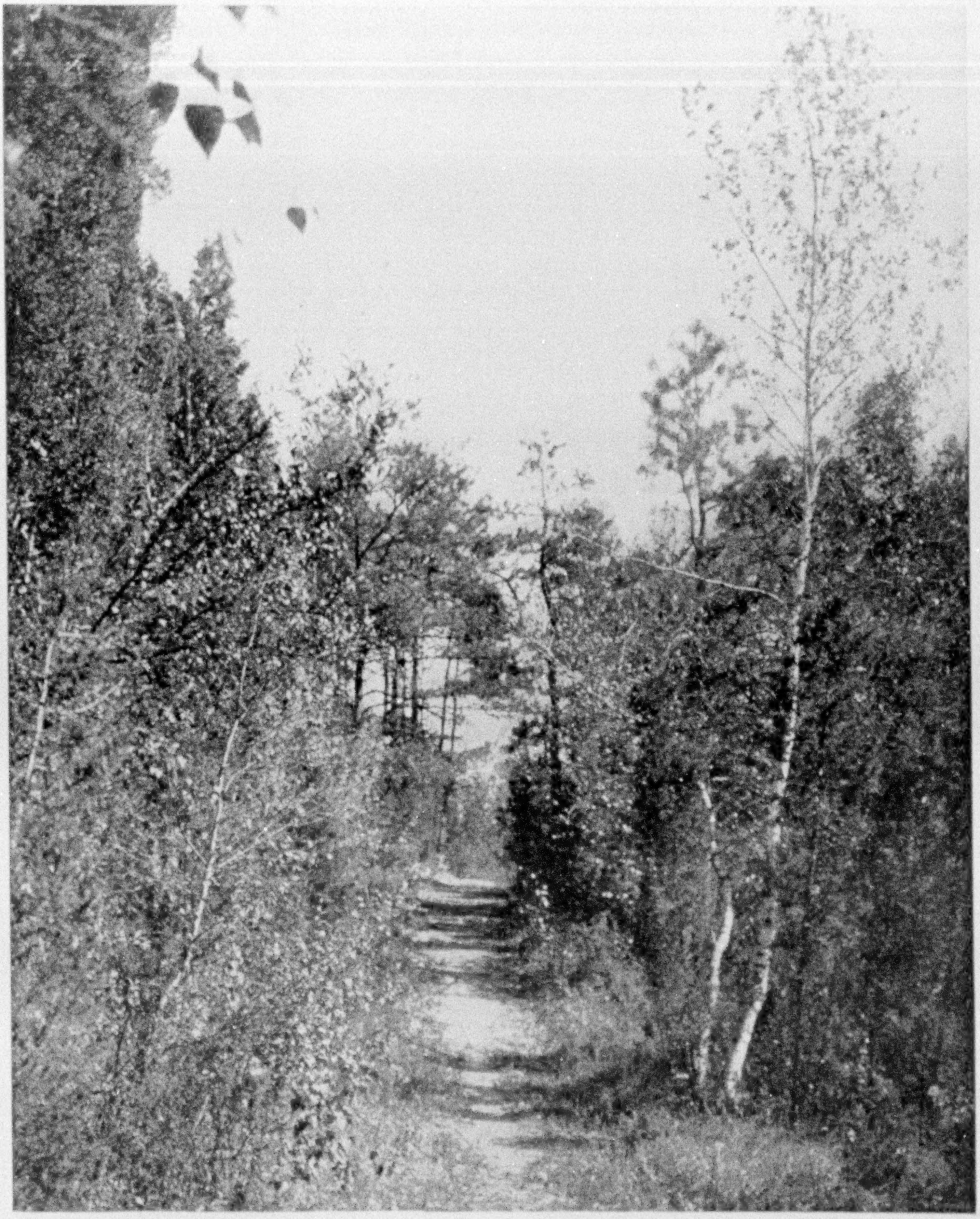


Photo by Thomas E. Marr and Son

ANOTHER PLACE WHERE BIRDS LIKE TO NEST

A wood road at The Pines. In the thickets along its sides the catbird, cuckoo, golden-winged warbler, chestnut-sided warbler, bluejay, brown thrush, chewink, purple finch, tanager, and other birds find attractive nesting sites. This wood road runs through that portion of Mr. Kennard's place on which the undergrowth has been encouraged, and on which over thirty varieties of birds breed each year (see page 315). Contrast with the scene on page 320.

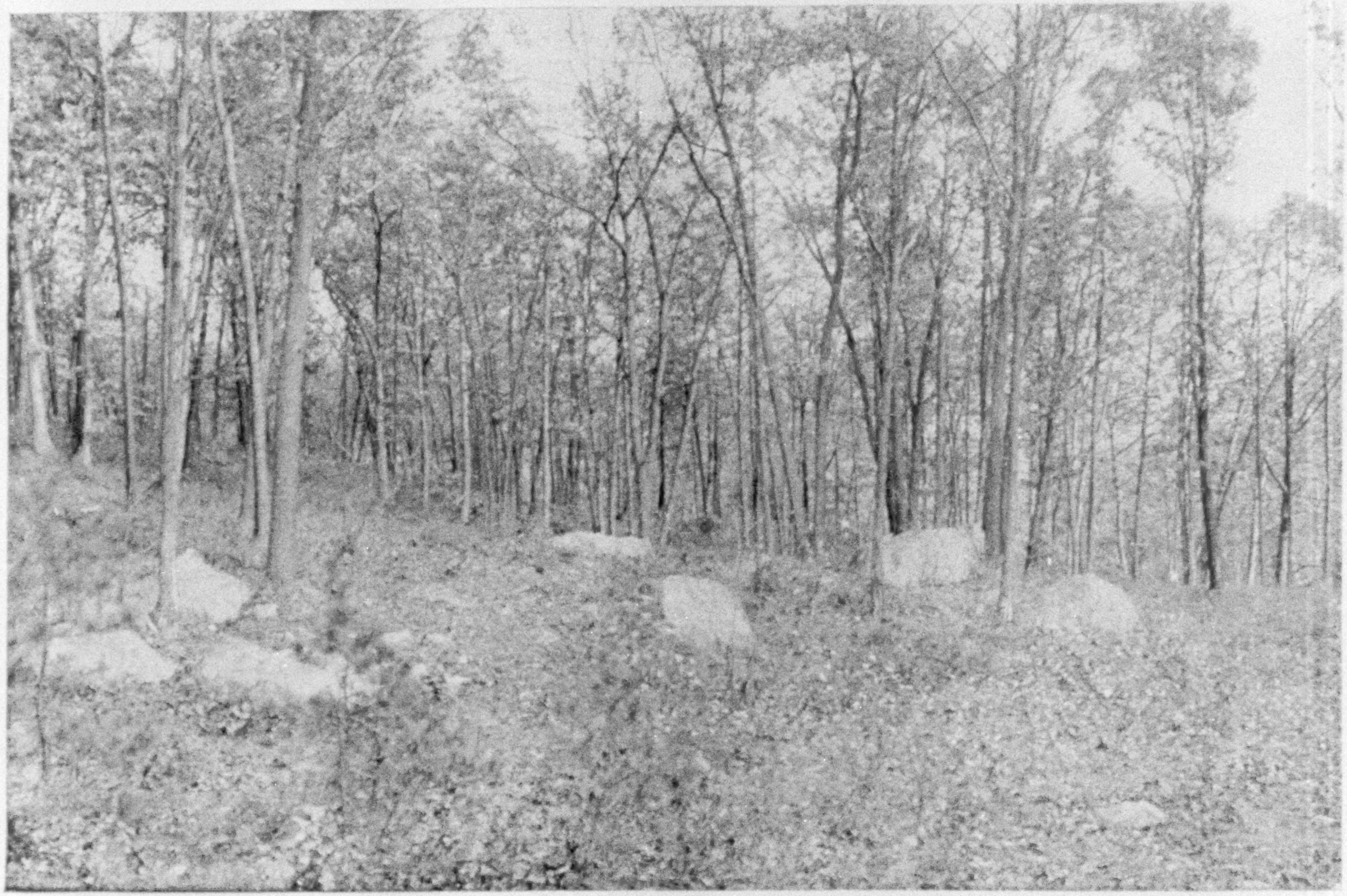
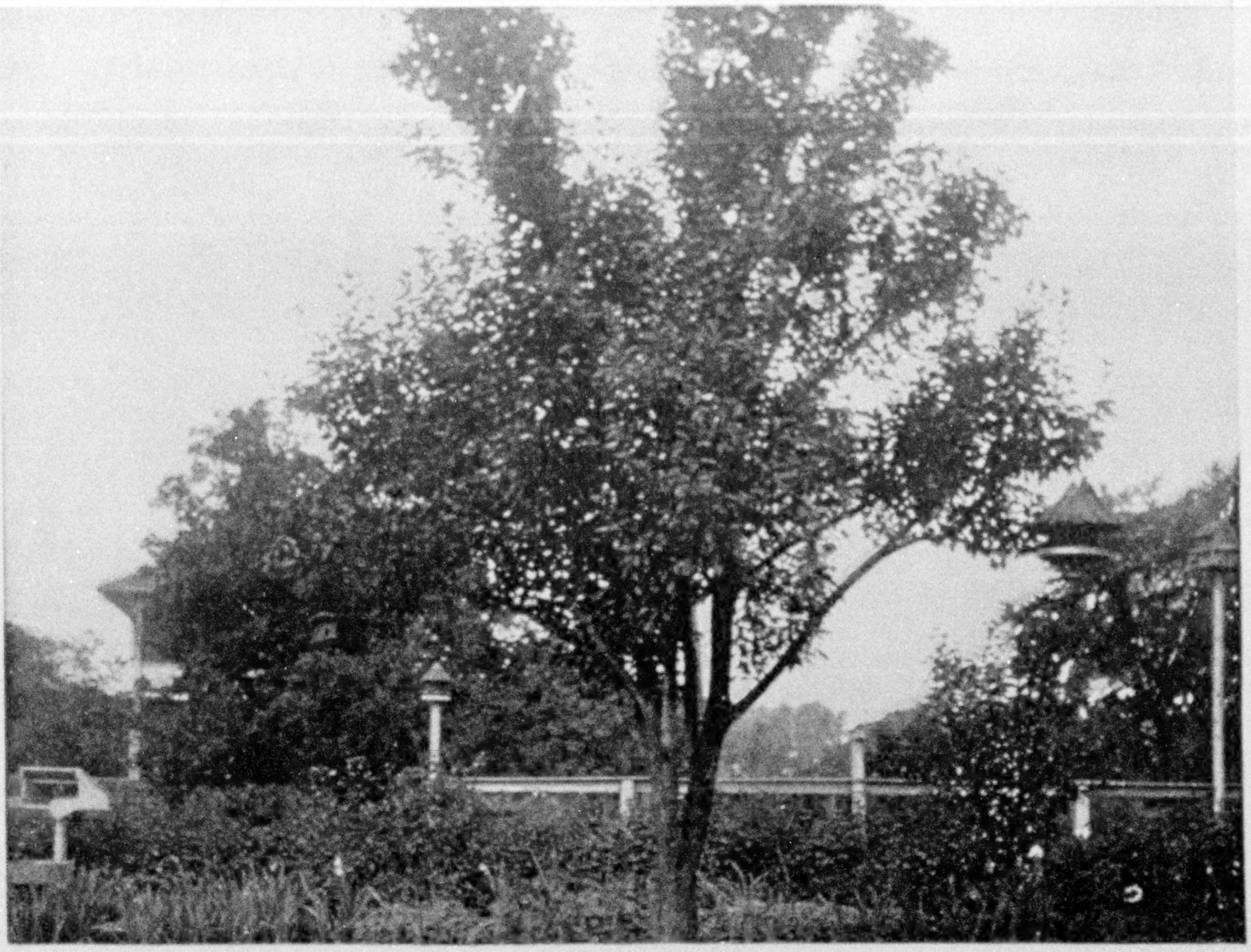


Photo by George R. King

BIRDS DO NOT LIKE THIS LAND, BECAUSE OF THE ABSENCE OF UNDERGROWTH

"The most important factor in attracting birds is the supplying of cover suitable for their wants. With this properly done, except in the case of birds that nest about buildings or in holes, nature will supply the nesting sites, as well as take care of the food supply, except in winter" (see text, page 315).



A BIRD-LOVER'S GARDEN

Photo by Joseph H. Dodson

The garden of Mr. Dodson, at Evanston, Ill., showing the various devices used by him in attracting birds: bath, weathercock food-house, houses for great-crested flycatchers, bluebirds, tree-swallows, and martins, from left to right in the order named.

breed nearly every year, while in the second area only from three to five different species build their nests.

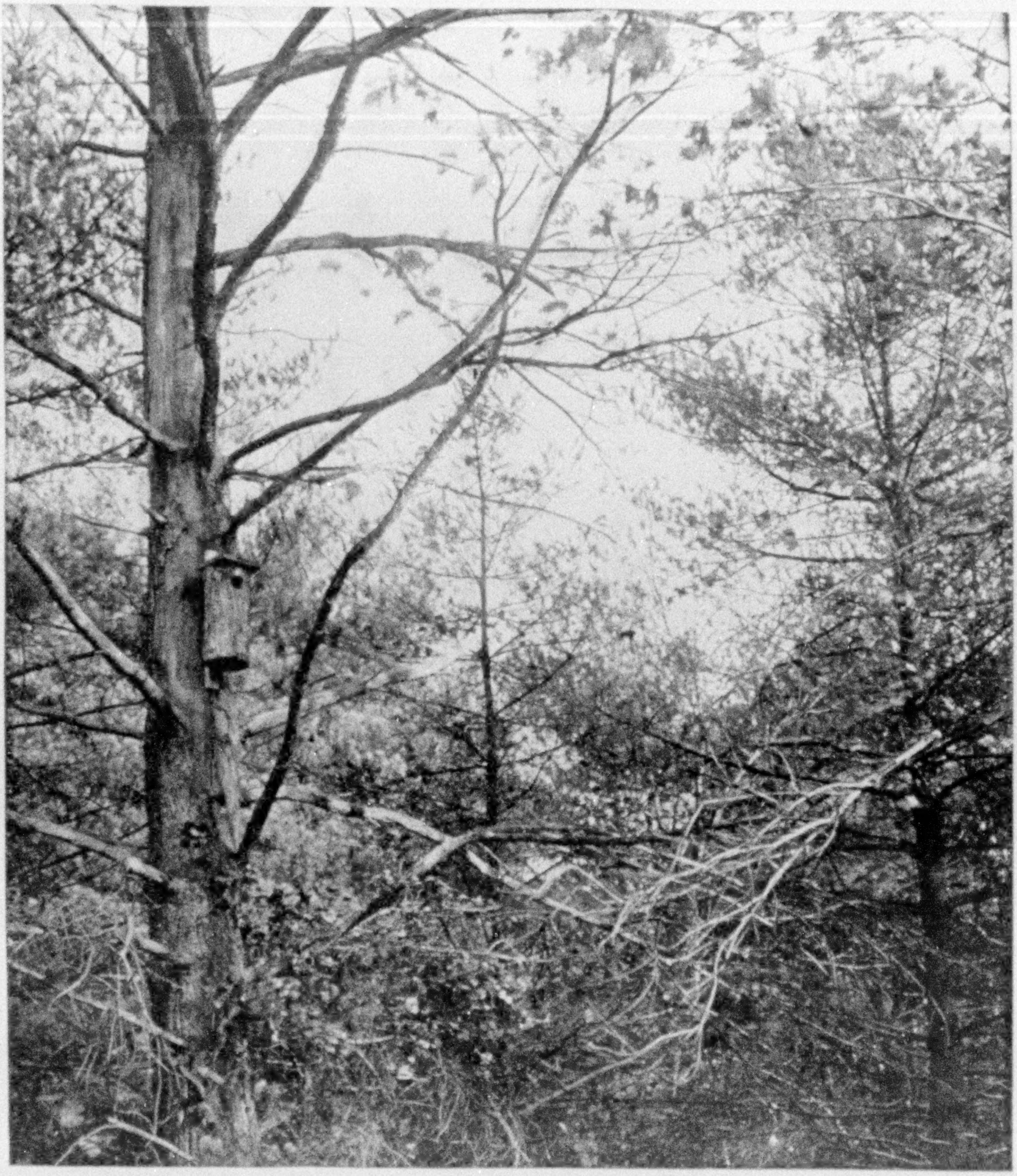
Almost every one who lives in the country can do something in the way of attractive planting about his house and grounds, and even in the more closely settled suburbs almost every place, no matter how small, can by judicious planting be made attractive to birds. Even a back yard may in its limited way, with proper treatment, be made a regular rendezvous for birds in the vicinity.

THE IMPORTANCE OF EVERGREENS

On suburban places and in the country the use of evergreens, large plantations when possible, is of prime importance as a protection from the elements, as a source of natural food supply, and on account also of the nesting sites they invariably offer. Nothing is finer than a plantation of white pine or hemlock. Spruce and balsam are beautiful and offer tempting nesting sites, while the native red cedar seems a favorite tree for the nest-builders and also contributes its berries toward the winter supply of food.

There is a huge hill at the edge of the sand dunes at Ipswich, Mass., swept by all the storms that come in from over the ocean, that years ago was as bare as a billiard ball, but upon one side of which the enterprising owner set out a large plantation of evergreens. Today that hillside is a Mecca for the birds from miles around, and noted among the bird lovers of the region for its varying bird life both winter and summer.

From an artistic standpoint, also, the use of evergreens is to be recommended. In these days, when there seems to be such an exodus from city to country, why shouldn't our country homes be made to look as attractive in winter as in summer? While we of the North may not in



A SCREECH-OWL'S FAVORITE NEST-BOX

Photo by George R. King

"Of bird-houses, to be supplied for those birds that nest about buildings or in holes of trees, there seems to be an almost infinite variety; tree stumps, real or artificial, boxes, cottages, houses, large and elaborate mansions, barrel-houses, gourds, flower-pots, tin-cans, shelves, and all kinds of contraptions" (see page 339). The nest-boxes "on my place have been occupied by screech-owls, bluebirds, chickadees, tree-swallows, flickers, white-breasted nuthatches, and great-crested flycatchers" (see page 341).

winter be surrounded by the verdure of summer, we need not content ourselves with the bare poles of deciduous growth. Evergreens protect us and delight our eyes with their color and varying lights and shadows, and what is more beautiful than a pine wood or group of evergreens after a snow-storm?

Those of us who possess farms, while naturally jealous of every encroachment on our fields, can always find some place which may be planted. The immediate

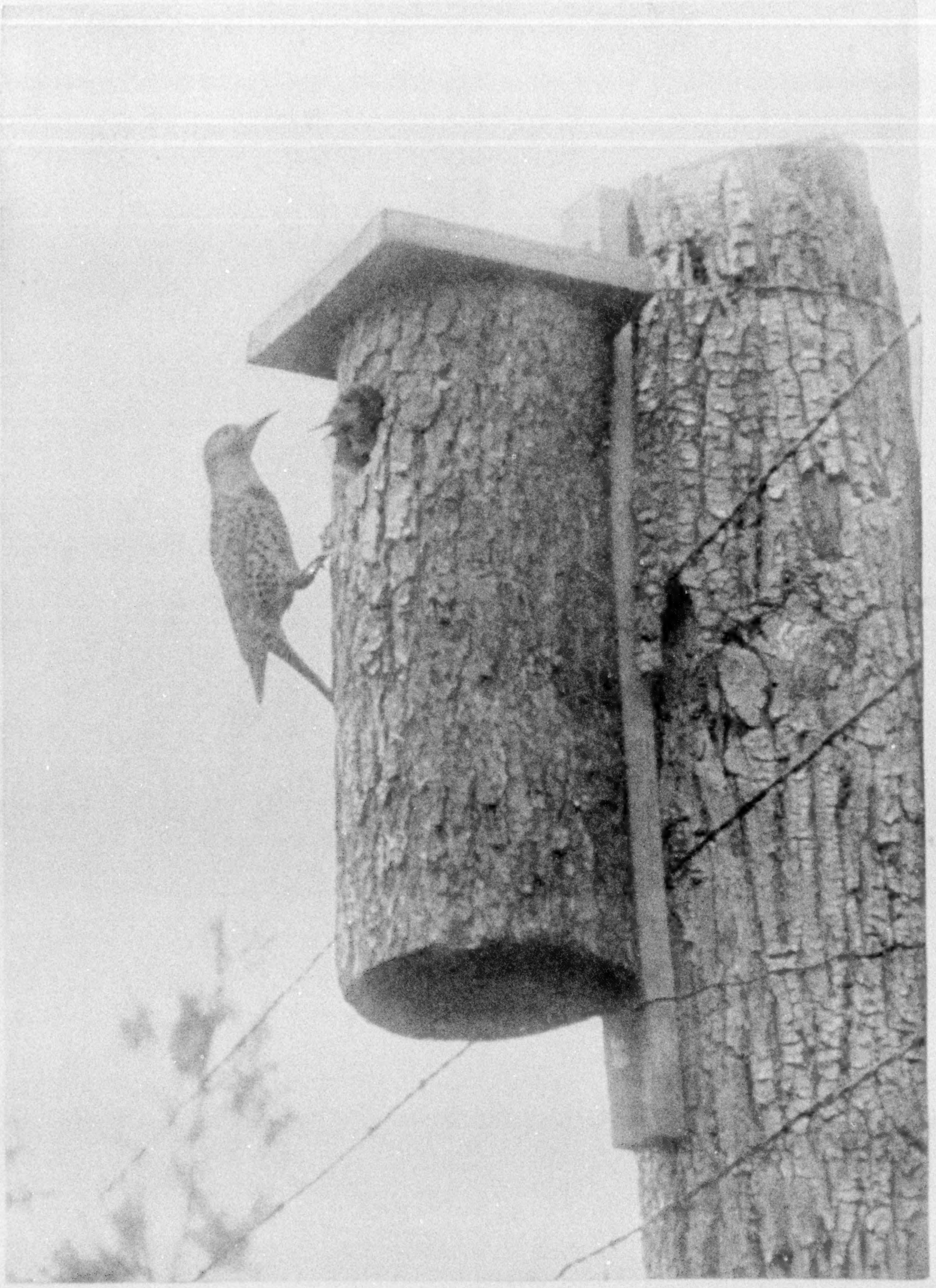


Photo by Ernest Harold Baynes

FLICKERS USING A BERLEPSCH BIRD-BOX

"I have used the Berlepsch type of vertical boxes with considerable success. These are simply sections of logs, hollowed out by special machinery in a very particular manner to represent woodpeckers' cavities, with entrance hole in side of desired diameter, and covered by a wooden cap or roof that may be lifted for purposes of investigation or in order that the nests may be cleaned out from time to time, the whole bolted to an oaken batten, by which they may be fastened to trees" (see page 339).

surroundings of our farm buildings are in many cases much too bare and bleak.

The average house when surrounded by proper planting almost invariably looks better than if left to stand out cold and hard and with base-line unbroken. Wind breaks may almost always be planted somewhere, both with benefit to the farm

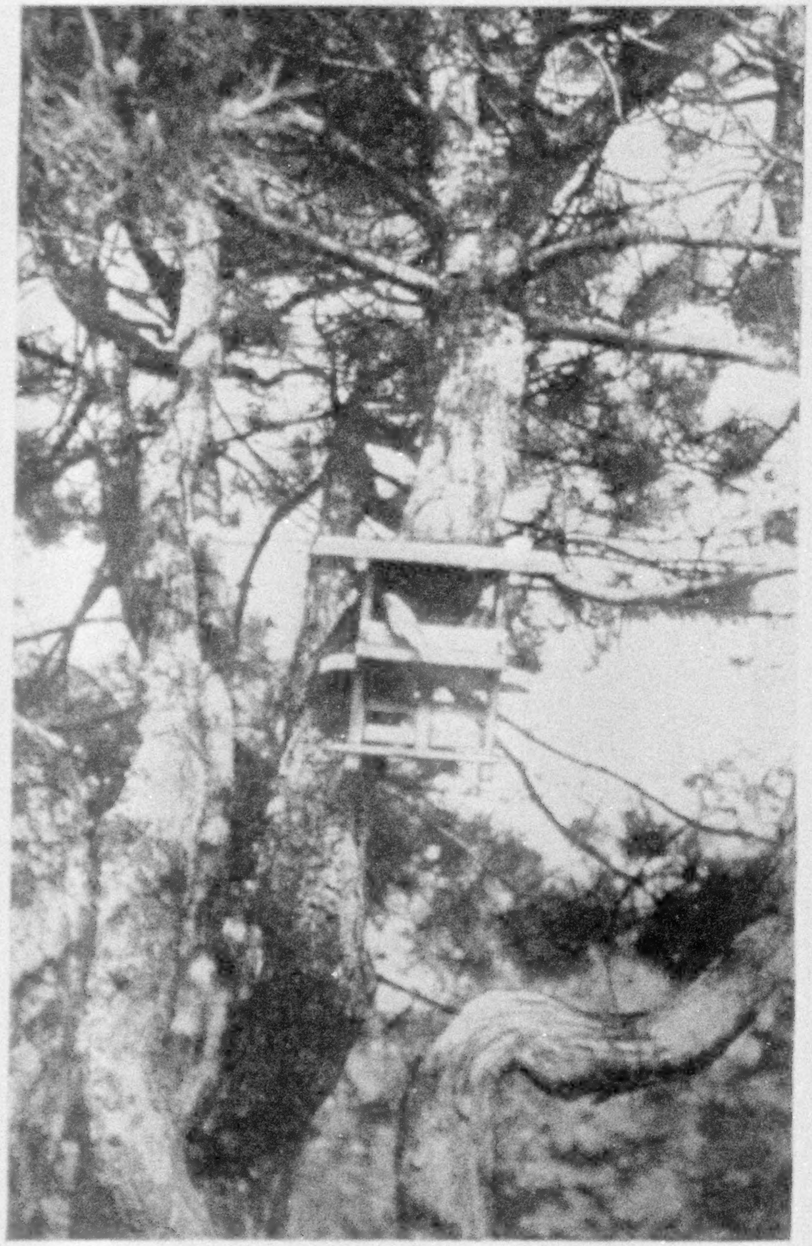


Photo by Joseph H. Dodson

A NEST SHELTER

A nest shelter on a tree, with a catbird going into its nest. Robins and brown thrashers also nest in them. "Of bird enemies, cats are undoubtedly the worst, and maudlin sentiment should not be wasted upon them, for they are incorrigible" (see text, page 342).

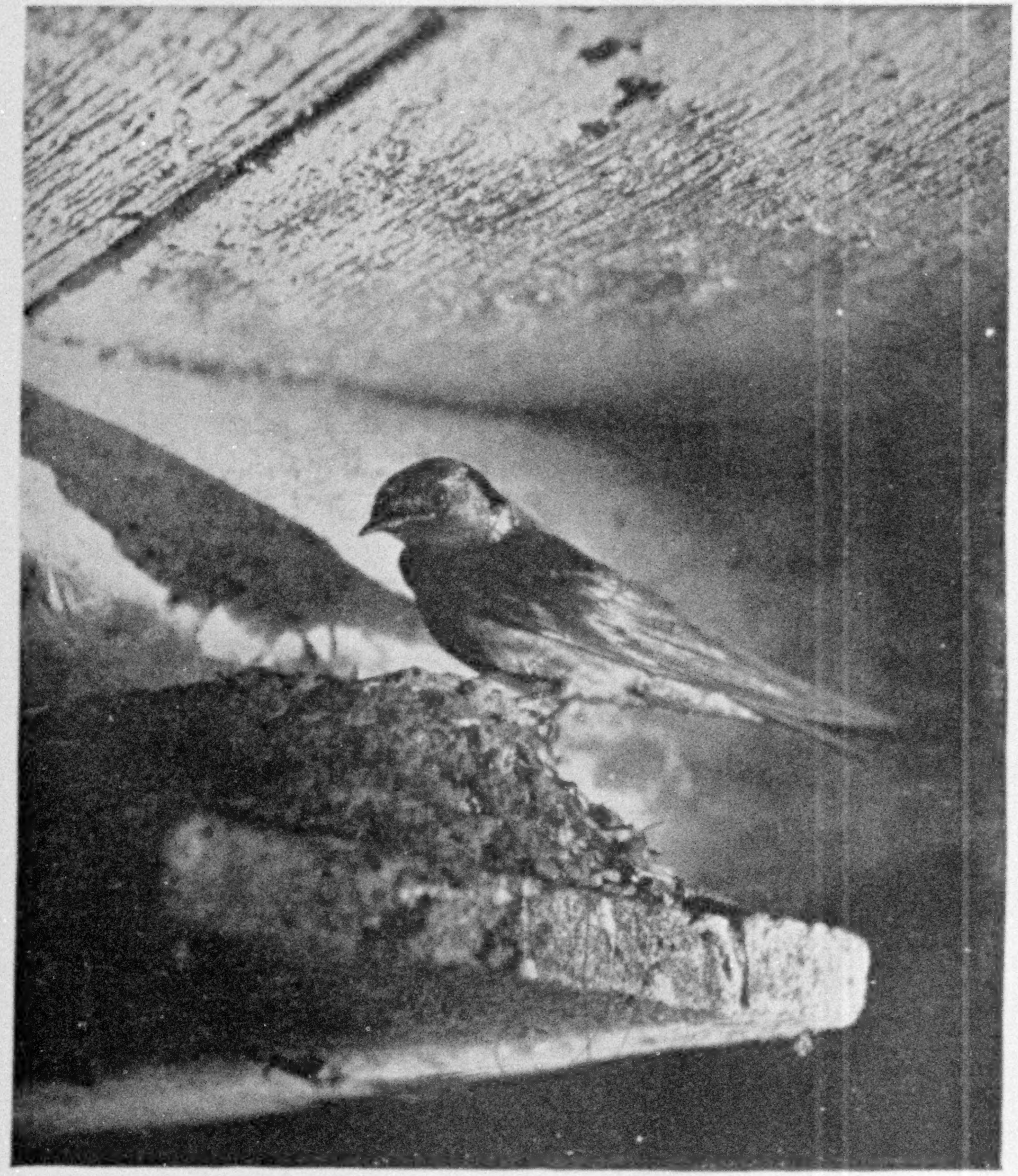


Photo by E. H. Forbush

BARN-SWALLOW ON ITS NEST

The barn-swallow is the most common of our swallows, and he arrives from the tropics in the middle of April and stays till late in September. He is a clever architect and builds his nest of mud and lines it with feathers. He generally chooses a beam or supporting shelf for his nest in the barn, and the little fellow in the picture considers that he has found an ideal location for his house.

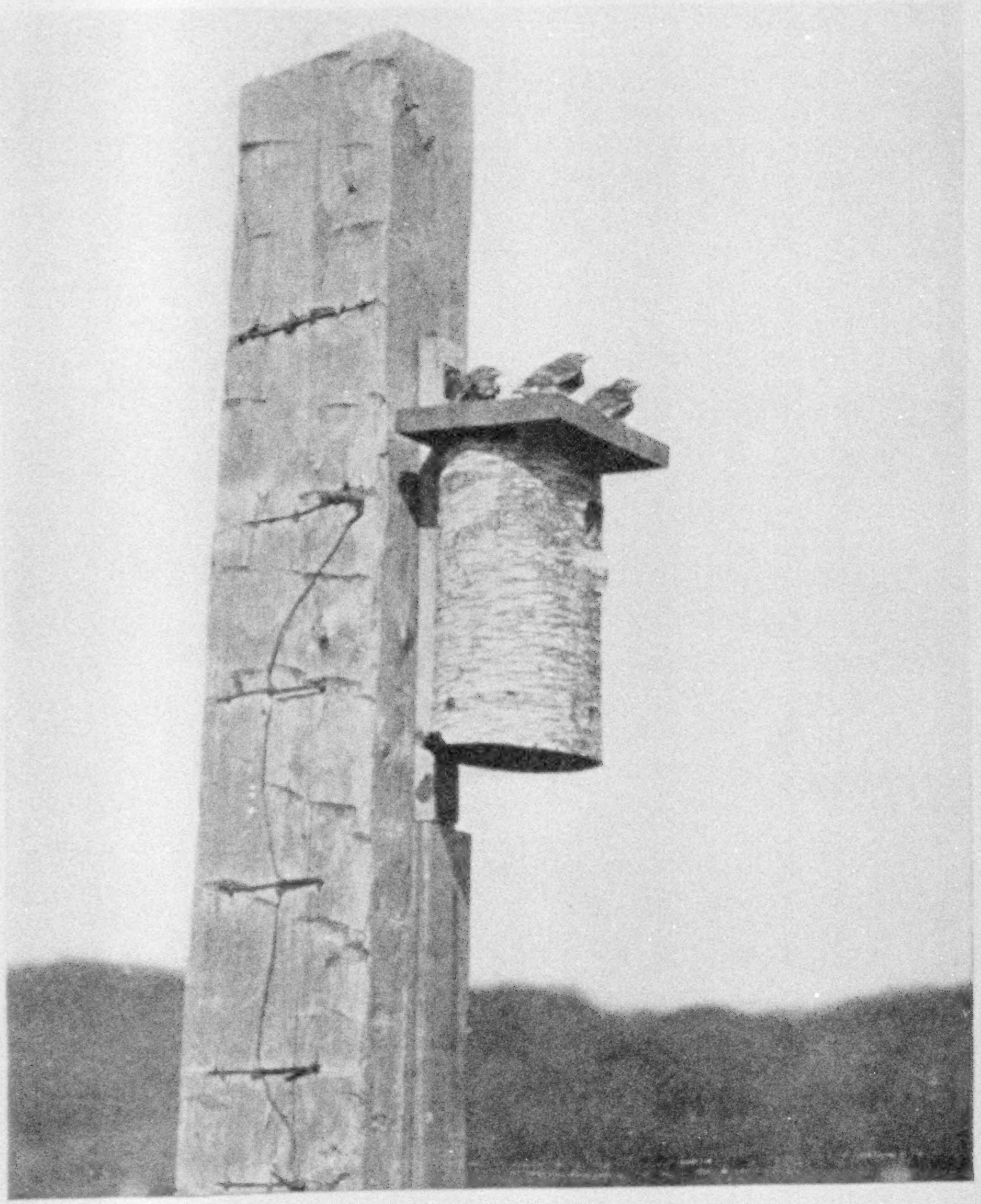


Photo by Ernest Harold Baynes

AN AIRING ON THE ROOF

This family of young bluebirds have left their nest, which is inside the bird-box attached to the post, to take an airing on the roof of their home.

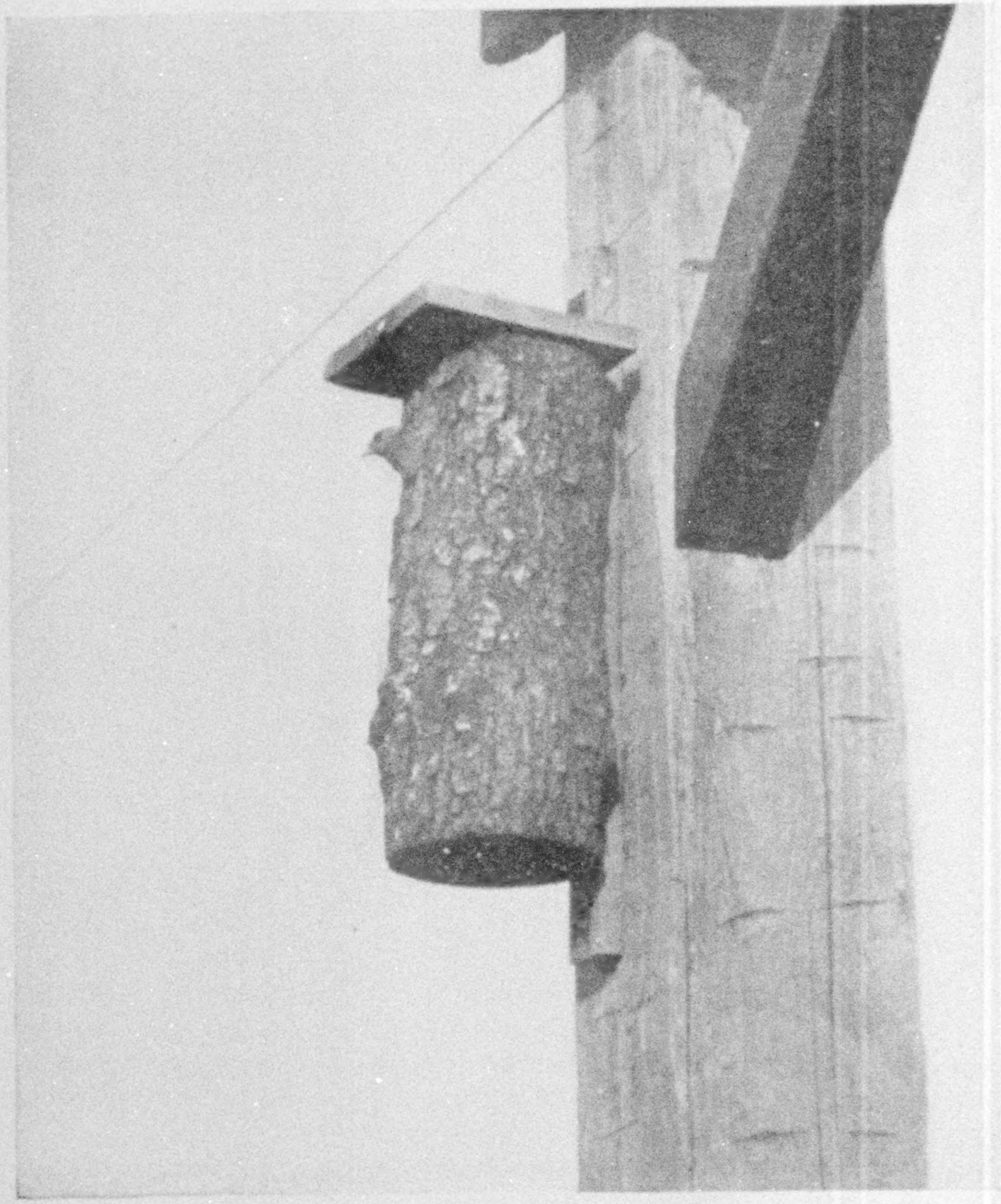


Photo by Louise Birt Baynes

LEAVING HER NEST

A female bluebird snapped as she was leaving her nest, which she has built in a Berlepsch bird-box fastened in the gate-post of Corbin Park at Meriden, N. H.

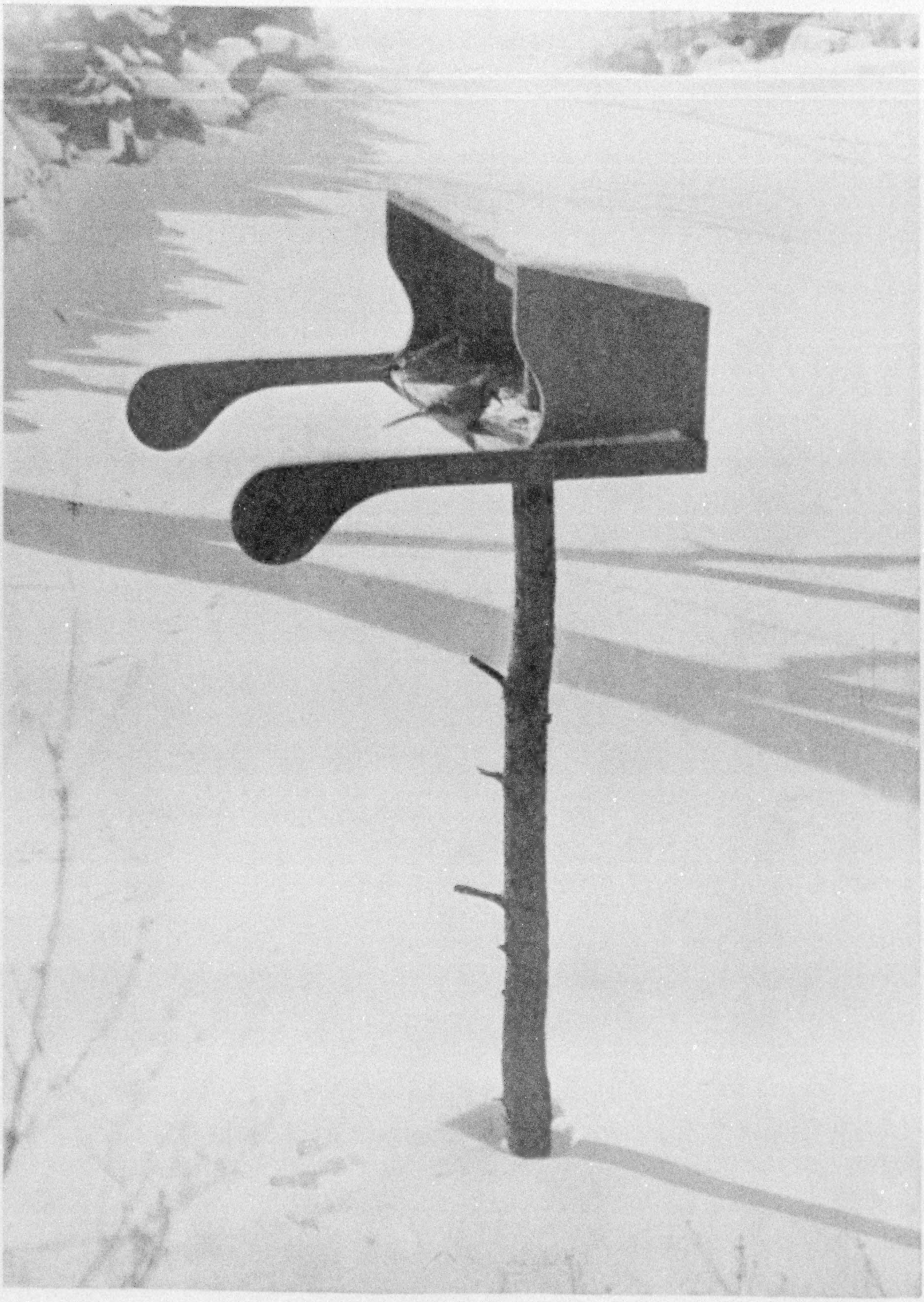


Photo by Ernest Harold Baynes

BLUEJAYS FEEDING IN WEATHERCOCK FOOD-HOUSE

"The same man builds also a sheltered food-house that turns with the wind like a weather vane, so as to present always a lee side for the better protection of the birds" (see page 332).

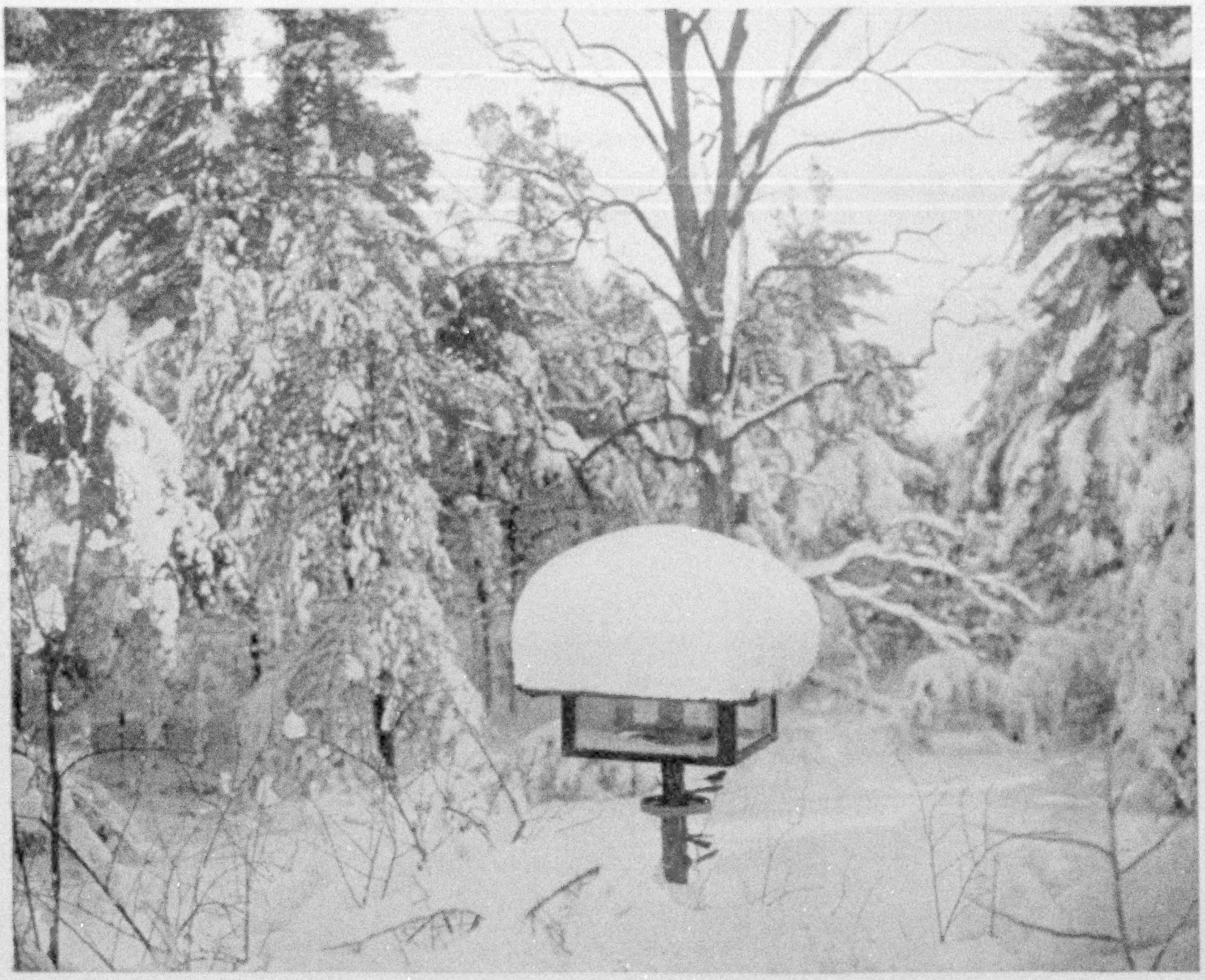


Photo by Thomas E. Marr and Son

A JUNCO VISITING AN AUDUBON FOOD-HOUSE

"The Audubon food-house has been much used on this side of the water and is most satisfactory. It consists of a square hip roof, with vertical glass sides suspended beneath and open at the bottom, the whole supported on a central rustic cedar post, encircled with food trays beneath the roof. The glass sides protect the food trays from the weather and at the same time admit light and allow of easy observation. These, when placed among the shrubbery about one's house, prove most attractive" (see pages 331 and 332).

as well as to the birds, while lanes may be bordered with trees and shrubbery and walls covered with vines without any possible encroachment on the fields. An old pasture planted with savin and white pine, hawthorns, elders, barberries, cornels, viburnums, and the like, may easily be metamorphosed into a bird reservation and still be useful as a pasture.

For deciduous growth to be used for cover, choose those berry-bearing trees and shrubs whose berries are most popular with the birds; and, when possible, choose also those that may offer most convenient sites for nest-building.

SOME USEFUL FOOD PLANTS

Care must also be taken in the choice of species, so as to get, if possible, a continuous supply of food, using such plants as the cherry, mulberry, raspberry, blueberry, huckleberry, etc., for the summer supply; elder and the various kinds of dogwood and viburnum, etc., for autumn; while for winter choose those plants which hold their fruit longest, such as the hawthorn, buckthorn, mountain ash, barberry, bayberry, sumach, wild rose, and the like.

Hedges, particularly if they are evergreen, are favorite resorts for birds, both in winter and summer, and an arbor-vitæ hedge is the best of them all. I remember such a hedge about one side of my father's old-fashioned garden that in summer invariably held its quota of robins', song sparrows', and chipping sparrows' nests, while in winter it was the

PAYING A MIDWINTER VISIT

Photo by Wilbur F. Smith

This shows a bird visitor attracted by the lump of suet fastened to the old pear tree. A lump of suet set in some convenient place is perhaps the surest way of securing bird visitors in midwinter, for it is a food supply they greatly appreciate.

protected resort of such birds as stayed with us.

In the Year Book of the Department of Agriculture for 1909 there is a most interesting article on "Plants Useful to Attract Birds and Protect Fruit," by W. L. McAtee. In this there is a list, on page 186, of the best trees and shrubs for attracting birds, given in the order of their attractiveness, as follows: Elders, raspberries and blackberries, mulberries, dogwood fruits, sumachs, wild cherries, blueberries, wild grapes, pokeberries, Virginia creeper berries, bayberries, juniper berries, service berries, holly berries, strawberries, the fruits of viburnums, hackberries, huckleberries, haws, spicebush berries, rose hips, sarsaparilla, sour gum, gooseberries, currants, and snowberry.

To the above list is added the following supplementary list of some other plants known to be attractive to birds, and to this the names of other species doubtless might be added: Manzanita, barberry, buffalo berry, silverberry, buckthorn, mountain ash, China berry, California Christmas berry, pepper tree, magnolia, nockaway, lote bush, and bluewood.

With the above very comprehensive lists to choose from, it is not a difficult matter to make out a list of trees and shrubs for almost any place, no matter how small, that will supply its quota of birds' food from early summer to the following spring, while if the place is a large one, or the problem at all difficult, it may be the best policy, as well as in the end the most economical, to consult some competent landscape architect as to the proper disposition of the proposed plantations. What is worth doing at all is always worth doing well.

Besides the trees and shrubs in the above lists, there are many herbaceous plants whose seeds are attractive to birds,

Photo by Ernest Harold Baynes

FLOCK OF QUAIL AT A FOOD STATION

"In bad weather, however, particularly in the North, where we are so apt to be covered up with snow, more artificial means of feeding should be resorted to, and food stations, food-houses, and food shelters of various sorts should be established in proper places. If quail or grouse are to be fed, inconspicuous bough shelters may be built in protected places among the fields or woods most frequented by them" (see page 331).

Photo by Ernest Harold Baynes

PINE SISKINS AND RED POLLS FEEDING ABOUT A HOUSE: NEW HAMPSHIRE

The pine siskin is a lover of evergreens and spends the winter wandering from copse to copse in search of seeds and pine cones. The red poll is a winter visitor from the far North, and with its rich crimson head and breast makes a pretty picture in the snow.

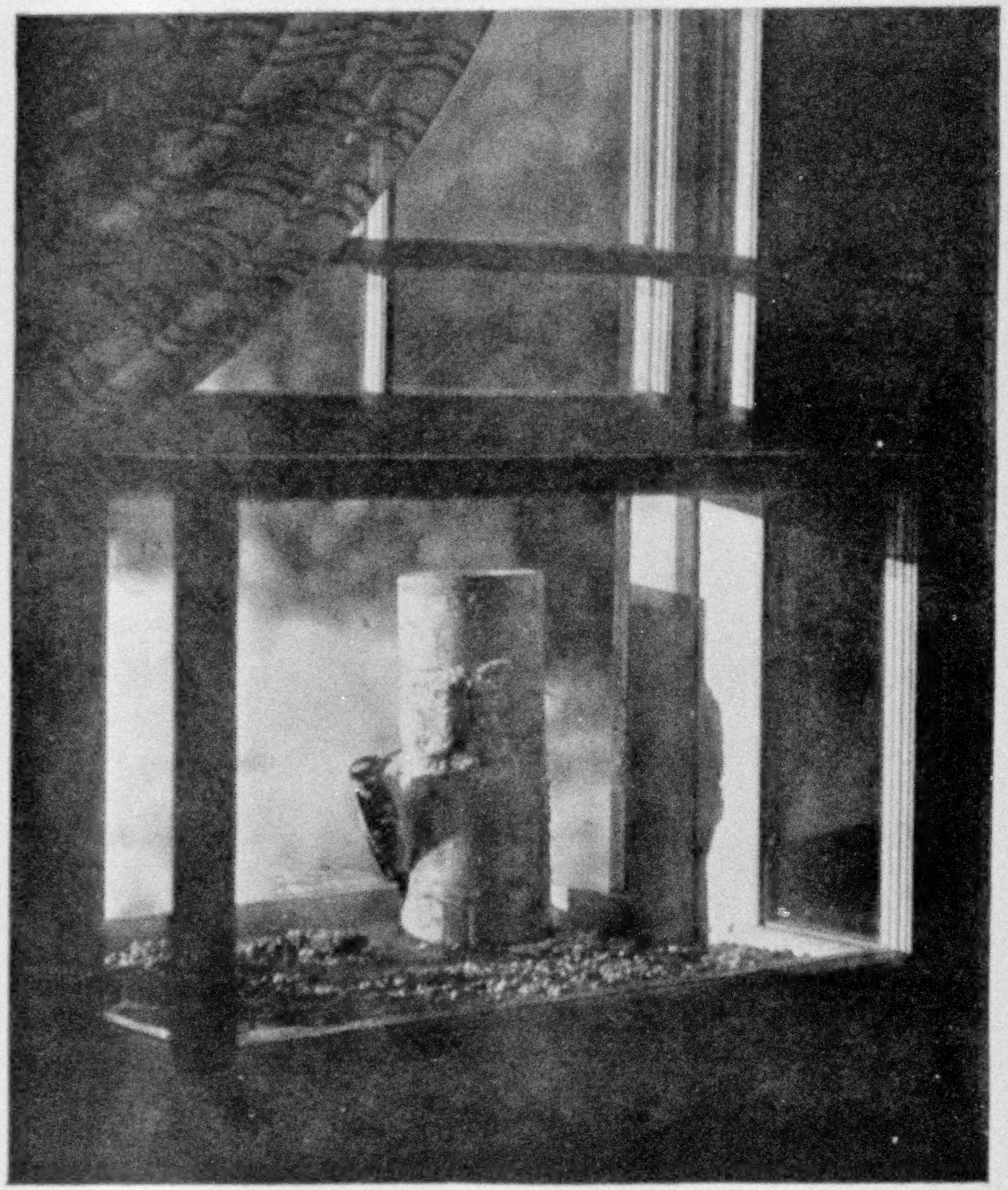


Photo by Ernest Harold Baynes

A SHY HAIRY WOODPECKER AT DINNER

The hairy woodpecker is a somewhat shy bird, who prefers the forest to the orchard and is not often seen about the house. His note is louder and sharper than that of most woodpeckers and cannot by any stretch of the imagination be called musical.

Photo by Louise Birt Baynes

A FRIENDLY CHICKADEE

The chickadee is found in all parts of the East, from Labrador to Maryland, and in all seasons of the year, but is seen most often in winter. They are unusually companionable birds and their tameness, quaint notes, and friendly ways make them general favorites.

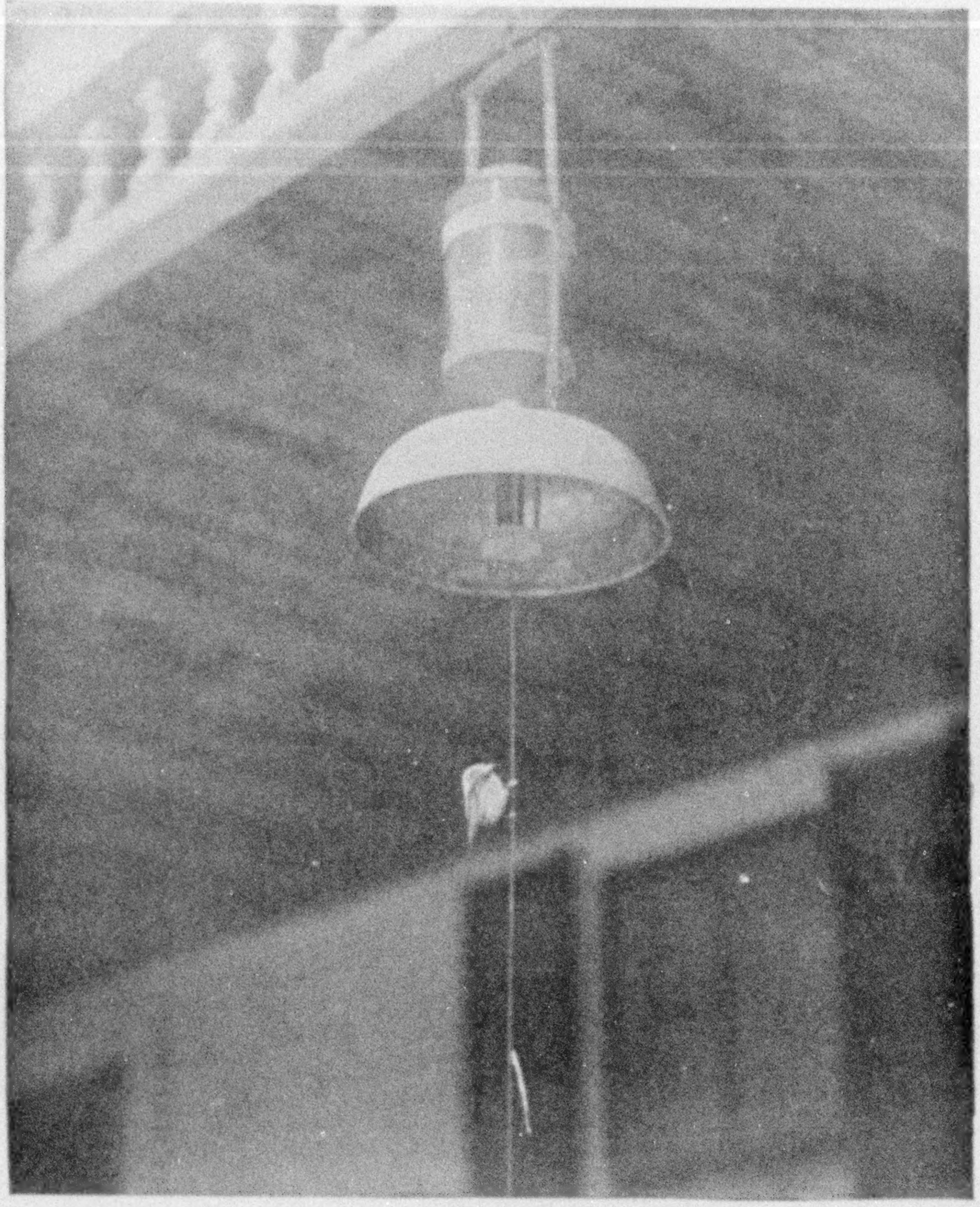


Photo by Ernest Harold Baynes

THE FOOD BELL

"Baron von Berlepsch has invented a food bell that supplies grain, etc., automatically from a receptacle above, and which may be suspended from a tree or piazza roof or any other place that seems best" (see page 332).

Sunflowers may be planted in groups about the flower garden or in lines among the rows of vegetables; wild sarsaparilla and pokeberry along the boundary walls; while if you have a corner somewhere in the fields that can be planted with buckwheat and Japanese millet, it will prove a great attraction, particularly in winter.

FOOD-HOUSES AND SHELTERS

In bad weather, however, particularly in the North, where we are so apt to be covered up with snow, more artificial means of feeding should be resorted to, and food stations, food-houses, and food shelters of various sorts should be established in proper places. If quail or grouse are to be fed, inconspicuous bough shelters may be built in protected places among the fields or woods most frequented by them, while about the house or among the neighboring plantations all sorts of devices may be resorted to.

Baron von Berlepsch, in Germany, has invented a food-house, an adaptation of which, called the Audubon food-house, has been much used on this side of the water, and is most satisfactory (see page 327). It consists of a square hip roof, with vertical glass sides suspended beneath and open at the bottom, the whole supported on a central rustic cedar post, encircled with food trays beneath the roof. The glass sides protect the food

Photo by Ernest Harold Baynes

A BLUEJAY FEEDING ON SUET

"Perhaps the simplest scheme of feeding, the least trouble, and the most attractive to numbers of birds, is the tying of a piece of suet to a convenient limb, or perhaps to the balustrade of one's piazza, preferably in a protected spot and one that can at the same time be easily watched from some window" (see page 333).

trays from the weather and at the same time admit light and allow of easy observation. These, when placed among the shrubbery about one's house, prove most attractive.

Baron von Berlepsch has invented also a food bell that supplies grain, etc., automatically from a receptacle above, and which may be suspended from a tree or piazza roof, or any other convenient place (see page 331).

Window boxes are a never-ceasing source of enjoyment. Mr. Ernest Harold Baynes built the first I ever saw at his home in Meriden, N. H., a particularly attractive one, which has helped him to become intimate with an astonishing variety of birds (see page 336).

Food shelves may be put up in all sorts of protected places—about houses, against tree trunks, etc.; and a food car, a sort of moving free-lunch counter, which may be run conveniently on a wire from window to neighboring tree, is actually manufactured by one enterprising gentleman; and the same man builds also a sheltered food-house that turns with the wind like a weather vane, so as to present always a lee side for the better protection of the birds (see page 326).

Baron von Berlepsch originated also what he calls a food tree, a freshly cut evergreen, preferably spruce or fir, or perhaps a discarded Christmas tree, set up in some convenient place, over which has been poured hot, and then allowed to cool, a mixture of food that is attractive to both insectivorous and graminivorous birds, the receipt for which is given in the little book, "How to Attract and Protect Wild Birds":*

"White bread (dried and ground), 4½ oz.; meat (dried and ground), 3 oz.; hemp, 6 oz.; crushed hemp, 3 oz.; maw, 3 oz.; poppy flour, 1½ oz.; millet (white)

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*For sale by the National Association of Audubon Societies, 1974 Broadway, New York City, N. Y. Price, 40 cents.

3 oz.; oats, 1½ oz.; dried elderberries, 1½ oz.; sunflower seeds, 1½ oz.; ants' eggs, 1½ oz."

A SIMPLE AND ATTRACTIVE FOOD SUPPLY

Perhaps the simplest scheme of feeding, the least trouble and the most attractive to numbers of birds, is the tying of a piece of suet to a convenient limb, or perhaps to the balustrade of one's piazza, preferably in a protected spot and one that can at the same time be easily watched from some window (see page 332).

In all these food-houses various kinds of food should be supplied — suet, crumbs, millet, hemp, rapeseed, canary-seed, and the like. On my place the birds have such a wealth of natural food that it is only during the winter storms and when the ground is covered with snow that they visit the food-houses; but on many other places—as, for instance, in Meriden, N. H., where Mr. Baynes and the Meriden Bird Club are doing such good work—there have been food-houses erected on places along the main street, entirely apart from any protecting shrubbery or natural food supply, and many of these food-houses seem to be well patronized both winter and summer.

Photo by B. S. Bowdish

ON INTIMATE TERMS

This jolly little white-breasted nuthatch has just taken a dainty morsel from the lips of its friend. These little birds are very clever climbers and can run up and down tree trunks in the most agile manner.

Water, particularly during the summer months or times of drought, is, of course, necessary for the birds. If they can't get it on your place, they will be forced to look elsewhere. The proper installment of a drinking fountain or bird bath is a simple affair, and one that is almost sure to prove a great attraction to the birds, as well as a never-failing source of entertainment to the owner.

Drinking fountains may be purchased ready made or manufactured at home. Almost any shallow receptacle will do when placed in some quiet spot not too far from protecting shrubbery, but out of reach of skulking cats. Where the cats have not all been eliminated, it is sometimes safer to place the bath on a pedestal.

A pool with foundation of concrete sunken in the ground, partially filled with earth and stones and planted with cattails, Japanese iris, or other moisture-loving plants, or perhaps with water-lilies and inhabited by a few goldfish, can be made a very interesting feature of any garden, to say nothing of its attractiveness to birds. It is essential, however, that the slope of the sides should be gradual and the water at the edges shallow (see pages 338 and 339).

If one has a brook or natural pond on the place, much can be done, particularly if the bottom of the pond is suitable for the planting of food for ducks. If the lay of the ground is such that a meadow

Photo by Louise Birt Baynes

LUNCHEON FOR TWO

In the midst of a tramp across the winter snow the naturalist halts for a rest and a little lunch, to which he invites a passing bird friend. Cordial relations have already been established, but the repast has not yet been begun (see picture, page 335)

A SANDWICH FOR TWO

Photo by Louise Birt Baynes

Having accepted the invitation, the bird settles down to enjoy his meal. The fact that he must share a sandwich with his host does not disturb him, for, like all birds, he is quick to recognize and trust a human friend (see picture, page 334).

or woodland glade may be flooded and a pond thereby installed, there is hardly any limit to the enjoyment that may be derived from a pond of this sort.

ATTRACTING THE WILD DUCK

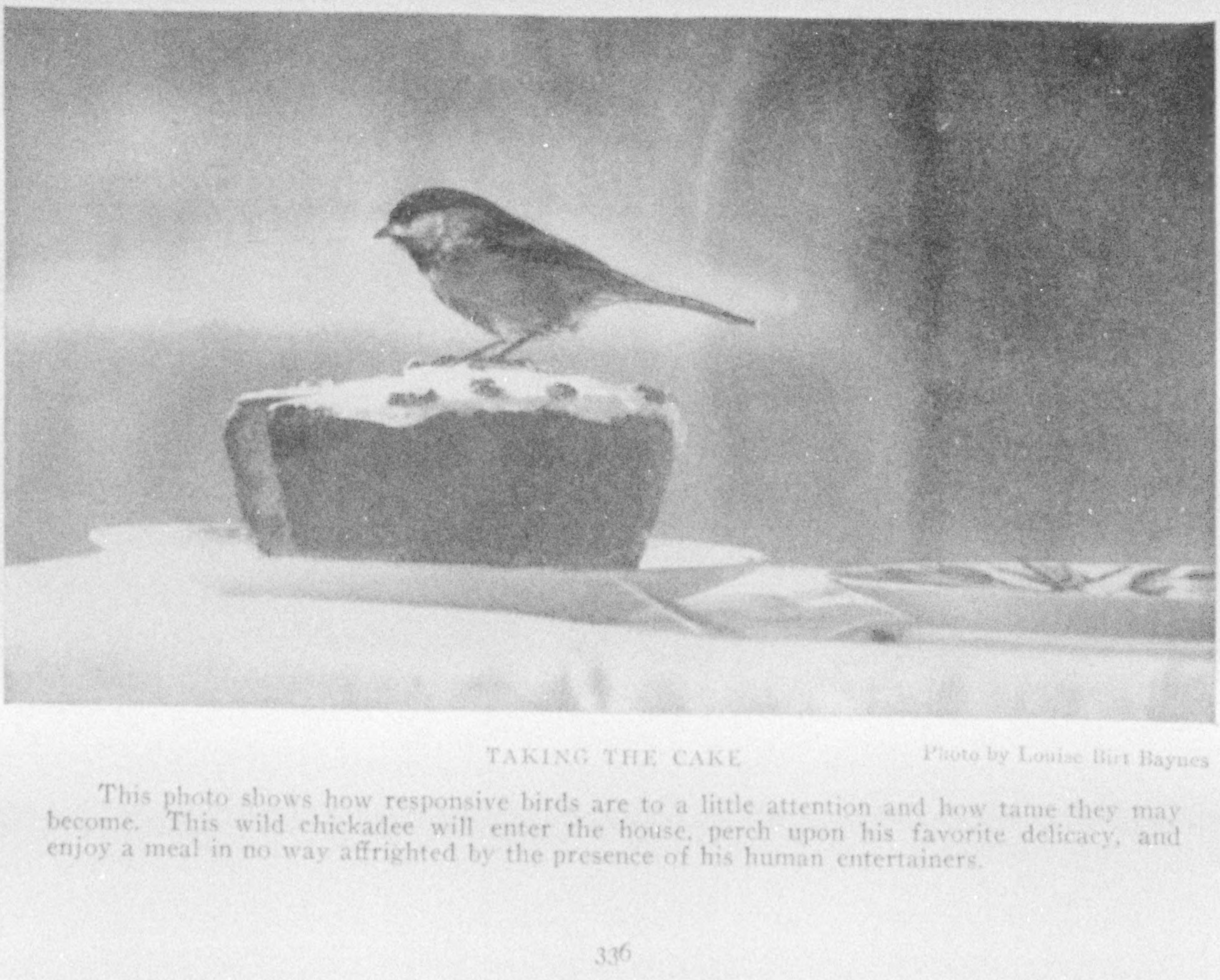
There is a little woodland glade, containing an acre or so, on my place, an opening in the woods surrounded by red maples, birches, alders, poison sumach, white azalea, high-bush blueberries, etc., which I flooded one winter merely as a safe skating pond for the children in the neighborhood.

Imagine my surprise and delight when one spring day, after the ice had gone out, I discovered there a whole flock of wild wood-ducks, and later during the summer was able to watch a flock of little "flappers," the progeny of a pair of wild black ducks that had bred there. Herons came there, too, and red wings frequented the edge of the pond. From an uninteresting swamp the place had been

XUM

THE HOSTESS ENTERTAINS — Photo by Ernest Harold Baynes

"Window boxes are a never-ceasing source of enjoyment. Mr. Ernest Harold Baynes built the first I ever saw, at his home in Meriden, N. H., a particularly attractive one, which has helped him to become intimate with an astonishing variety of birds" (see page 332).



TAKING THE CAKE — Photo by Louise Birt Baynes

This photo shows how responsive birds are to a little attention and how tame they may become. This wild chickadee will enter the house, perch upon his favorite delicacy, and enjoy a meal in no way affrighted by the presence of his human entertainers.

WHAT BIRDS CAN DO

Photo by Joseph H. Dodson

A great-crested flycatcher house, with bluebird, suspended from a pear tree, from which Mr. Dodson last year picked eight bushels of pears with not a worm hole in one, and that notwithstanding the fact that the tree had never been sprayed. A flycatcher is certainly a cheaper investment than a spraying-machine.

"About houses and buildings, particularly those on our farms, the ordinary type of bird-house rather than the hollow log is perhaps more appropriate. Bluebirds, tree-swallows, and house-wrens take to them readily, and if you have a large house on a high pole you may be lucky enough to attract a colony of martins" (see text, page 341).

completely metamorphosed into a very attractive and interesting spot, replete with bird life.

If wild rice can be made to grow, ducks will be sure to come in greater numbers each year, while regular feeding with corn at proper times may prove an additional attraction to whole flocks of ducks during the migration. Tame call-ducks may be introduced, and if there are near-by woods nest boxes for the attraction of the wood-ducks should be put up.

One may even go into the raising of ducks, though this is often both bothersome and expensive, while the simple flooding of a meadow and intelligent planting of its shores is comparatively little trouble.

Mr. Herbert K. Job, State Ornithologist of Connecticut, is having some very interesting experiences on a game preserve in Connecticut, where low-lying areas have been flooded and the wild ducks attracted in increasing numbers each year from miles around (see picture, page 338).

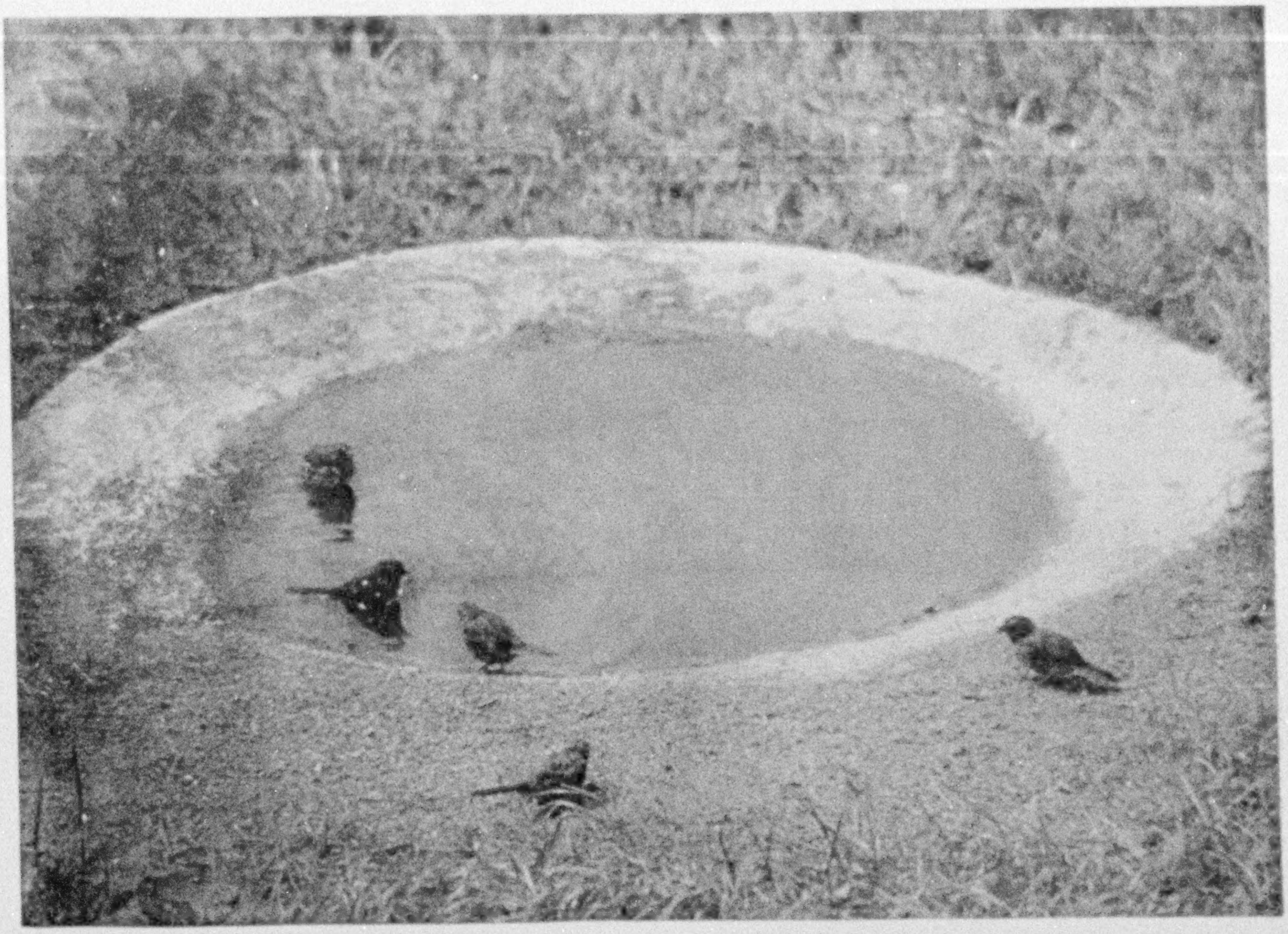
I know of one man in Canada who several years ago fed a small flock of wild geese that chanced to alight in a pond close beside his house. The geese appreciated the treatment so much that they later returned with friends, and have kept it up from year to year until now I believe that he has had at one time several hundred wild geese virtually in his front yard, and in a very exposed

A FLOCK OF MALLARDS AS VISITORS Photo by Dr. John C. Phillips

"If wild rice can be made to grow, ducks will be sure to come in greater numbers each year, while regular feeding with corn at proper times may prove an additional attraction to whole flocks of ducks during the migration. Tame call-ducks may be introduced, and if there are near-by woods, nest-boxes for the attraction of the wood-ducks should be put up" (see page 337).

WILD BLACK DUCK ON A GAME PRESERVE Photo by Herbert K. Job

"Mr. Herbert K. Job, State Ornithologist of Connecticut, is having some very interesting experiences on a game preserve in Connecticut, where low-lying areas have been flooded and the wild ducks attracted in increasing numbers each year from miles around" (see page 337).



SONG-SPARROWS TAKING A BATH Photo by Ernest Harold Baynes

"A pool with foundation of concrete sunken in the ground . . . can be made a very interesting feature of any garden, to say nothing of its attractiveness to birds. It is essential, however, that the slope of the sides should be gradual and the water at the edges shallow" (see page 333).

position at that. They seem absolutely fearless, come and go at will, though only a short distance away are gunners who are waiting to take a crack at them.

Only a few of us have ponds to which geese may be attracted, but the above experiment shows what can be and has been done in the way of attracting and taming locally the shy wild geese.

HOUSES FOR THE BIRDS

Of bird-houses, to be supplied for those birds that nest about buildings or in holes of trees, there seems to be an almost infinite variety; tree stumps, real or artificial, boxes, cottages, houses, large and elaborate mansions, barrel-houses, gourds, flower-pots, tin-cans, shelves, and all kinds of contraptions.

Mr. Ernest Thompson Seton went so far as to construct on his place in Connecticut a huge artificial stump, filled with imitation woodpeckers' holes, etc. He attracted numbers of different kinds of birds and animals, and he seems to have had no end of fun with it. It is not allowed to all of us, however, to be given either the opportunity or the enthusiasm possessed by Mr. Seton.

Of the various kinds of houses space will allow but brief mention. On my own place, which is covered largely with woods, I have used the Berlepsch type of vertical boxes with considerable success. These are simply sections of logs, hollowed out by special machinery in a very particular manner to represent woodpecker cavities, with entrance hole in side of desired diameter, and covered by a wooden cap or roof that may be lifted for purposes of investigation or in order that the nests may be cleaned out from time to time, the whole bolted to an oaken batten, by which they may be fastened to trees (see pages 323 and 325).

These may be obtained in Germany,

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A BALTIMORE ORIOLE AFTER A BATH   Photo by Ernest Harold Baynes

The Baltimore oriole is remarkable for its bright colors, and to these it owes its name, as the livery of the Lords Baltimore, who founded Maryland, was orange and black of just those tones that the bird exhibits. Cats have been eliminated on this place.

A BROWN THRASHER BATHING   Photo by Louise Birt Baynes

"Water, particularly during the summer months or times of drought, is necessary for the birds. If they can't get it on your place, they will be forced to look elsewhere. The proper installment of a drinking fountain or bird bath is a simple affair, and one that is almost sure to prove a great attraction to the birds, as well as a never-failing source of entertainment to the owner" (see text, page 333).

A COLONY OF EAVE SWALLOWS

Photo by Fred B. McKechnie

This colony of swallows built their nests beneath the eaves of a barn at Luenburg, Vt. Note the partial support given by the narrow molding. These eave swallows become much attached to their homes, and if undisturbed will return year after year with unfailing regularity.

but are now manufactured by at least two people in this country. Those on my place have been occupied by screech-owls, bluebirds, chickadees, tree-swallows, flickers, white-breasted nuthatches, and great-crested flycatchers. House-wrens, which are very local in our part of the country, have so far avoided them, and I have failed ignominiously to attract either the downy or the hairy woodpeckers, both of which frequent my woods.

One firm makes bird-houses out of natural hollow logs or limbs, a hole bored in the side, and with wooden cap and bottom, while another makes an imitation woodpecker's nest of pottery. The Berlepsch type are, however, in my opinion, far and away ahead of these others.

BIRDS THAT WILL NEST IN PREPARED HOUSES

About houses and buildings, particularly those on our farms, the ordinary type of bird-house rather than the hollow log is perhaps more appropriate. Bluebirds, tree-swallows, and house-wrens take to them readily, and if you have a large house on a high pole you may be lucky enough to attract a colony of martins. Chickadees, great-crested flycatchers, and screech-owls may use these boxes, and the following is a list of birds recorded as having bred in nest boxes of one sort or another:

Wood-duck, sparrow-hawk, screech-owl, flicker, red-headed woodpecker, great-crested flycatcher, starling, Eng-

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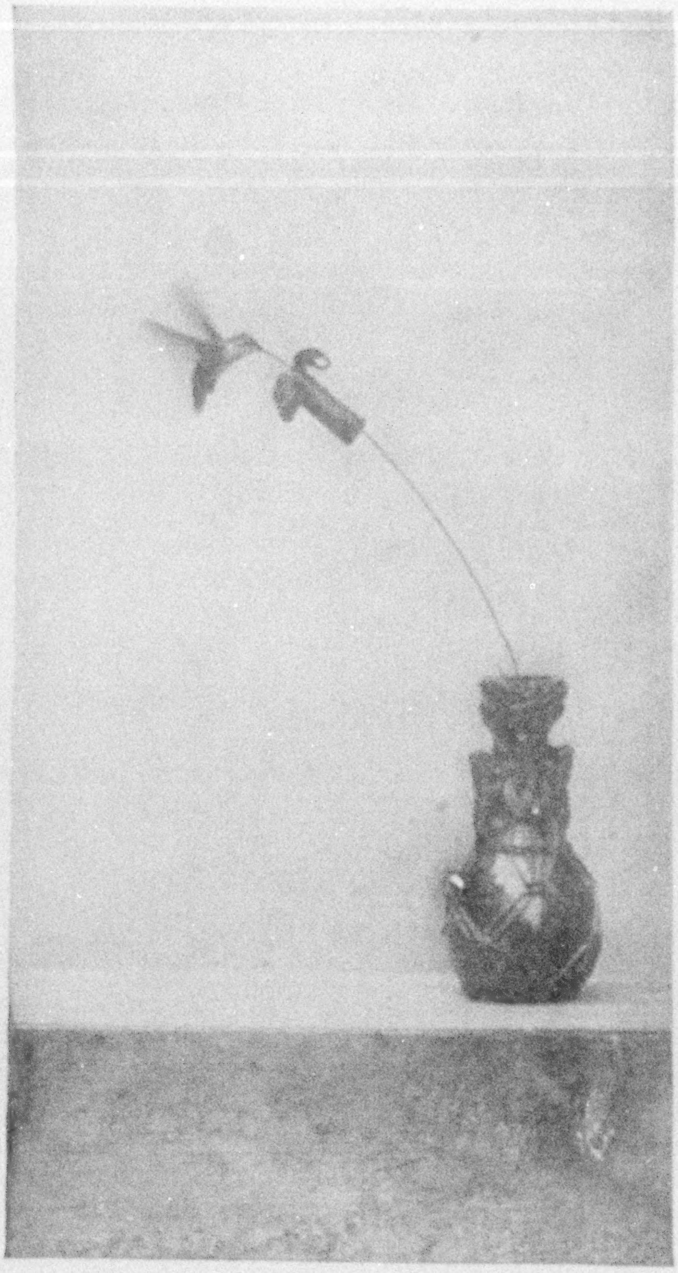


Photo by Louise Birt Baynes

THE DAINTIEST GUEST

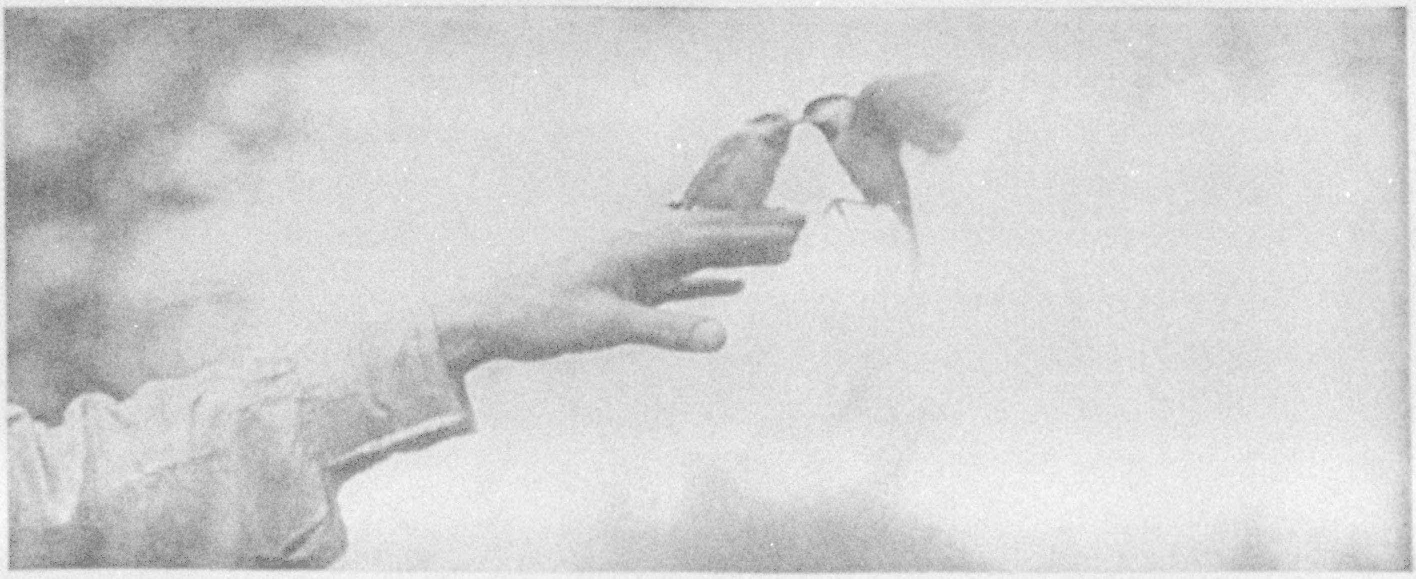
A picture of an inquisitive and very puzzled humming-bird probing an artificial flower

lish sparrow, house-finch, tree and violet green swallow, purple martin, house-wren, Parkman's wren, Bewick's wren, Vigor's wren, and Texas Bewick's wren, white-breasted nuthatch, tufted titmouse, black-capped chickadee, Oregon chickadee, Carolina chickadee, robin, and three varieties of bluebirds—eastern, western, and mountain. To this list the Carolina wren ought probably to be added; though while I do not know personally of any record of its actually building in a bird-box, it builds about houses and in the most unheard of and crazy places.

Robins and phœbes may be encouraged by shelves conveniently placed beneath the roofs of porches, piazzas, and sheds, while the insect-eating barn and eave swallows may often be helped in their choice of nesting sites by a supporting shelf. Vines on trellises or about the piazza posts are attractive nesting sites for chipping sparrows, as well as robins, and I once knew of a bluejay that built in a wistaria vine overhanging a friend's front porch.

One can never tell just what birds are going to do. Crows are reported to have nested in one of the squares in the city of Philadelphia and on Beacon Hill in Boston, while a pair of sparrow-hawks have bred beneath the eaves of the Lawrence Scientific School in Cambridge, Mass.

Chimney swifts should also be encouraged, and when possible the chimneys



MOTHER AND DAUGHTER

Photo by Ernest Harold Baynes

This is a photo of a wild chickadee feeding her young in June. She does not fear in summer the hand that feeds her in winter

Photo by Ernest Harold Baynes

THE BEST KIND OF A BIRD ON A HAT

left open at the top, and so constructed as to admit of their ready occupancy.*

THE ENEMIES OF THE BIRDS

Of bird enemies, cats are undoubtedly the worst, and maudlin sentiment should not be wasted upon them, for they are incorrigible. The plain, ordinary alley cat should be eliminated when possible, and they make fine fertilizers when planted about the roots of one's favorite grape-vine. Cat-possessing neighbors should be warned that if their cats are caught trespassing they will be turned into fertilizer.

Red squirrels are next on the list and should be shot on sight, but I have never found the depredations of the gray squirrel to warrant similar treatment. Bird-chasing dogs are a nuisance and should be restrained during the breeding season.

Skunks and foxes should both be discouraged, and the wily raccoon and elusive weasel also, if perchance they are found to lurk about.

Of the hawks, the cooper and sharp-shinned hawks should both be shot at sight, while of the owls, the great horned is incapable of reform. The little screech-owl is almost always beneficial on account of the numbers of mice it often de-

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* One of the most absorbing and interesting books of the present day, replete with information on the above subject, called "Useful Birds and Their Protection," by Edward Howe Forbush, State Ornithologist of Massachusetts, has been published by the Massachusetts Board of Agriculture and may be obtained from them for the sum of $1.00.

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stroys, but individual screech-owls are often destructive to bird life.

Crows and jays will bear watching. There seem to be good crows and jays, and then again individuals among them of exceeding bad habits, as many a long-suffering bird family knows to its sorrow.

In many places the English sparrows are pests and should be shot and trapped relentlessly. They are pretty canny birds, and if once they learn you are after them with a gun they quickly desert the premises. If owing to surrounding conditions gunning for them seems undesirable, traps may be used with telling effect. There are several kinds in use in this country.

Last, but not least, the black snake should be killed whenever found; its large size, great activity, tree-climbing propensities, and taste for eggs and small birds have fairly won for it the reputation of being one of the birds' deadliest enemies.

REDEEMING THE TROPICS

BY WILLIAM JOSEPH SHOWALTER

Author of "Battling with the Panama Slides," "The Countries of the Caribbean," "The Panama Canal," in the National Geographic Magazine

IN THESE days when medical science has been recording one triumph after another over germ-produced diseases, when the germ-hunter in his laboratory has been ascertaining the causes of so many mysterious afflictions and laying the foundations for one preventive measure after another, people all but lose sight of the tremendous debt humanity owes to the expert in experimental medicine and the sanitarian. Indeed, he would be a prescient mathematician who could calculate what the vast amount of this debt is.

It is only when we look back over the records of the past, when civilization was young and humanity without knowledge of the causes of the great epidemic diseases, that we can have a faint appreciation of what the patient man of the microscope has wrought in humanity's behalf.

When we see Naples, in the seventeenth century, as helpless as a new-born babe in the grip of a plague during which 380,000 souls perished in six months; when we see Constantinople, in 1812, with 144,000 deaths; when we see London, in the days of the great plague, with 70,000 of its population carried off; when we go back to China and behold a few short years in the fourteenth century with a "black death" mortality record of 13 million souls, and to Europe, in the great scourge of 1347-1350, and see 25 million people dying; when we come on down the years and see the untold millions who have died from the numerous pestilences which have inflicted death upon mankind; then, and not till then, can we begin to appreciate what it all means.

Even then our appraisal will fall far short of the truth, for in those times the world was, in a sense, larger, the seas were broader, and the distances on land much greater than in these days of highly developed transportation and commerce. How can the mind conceive of the terrible toll epidemic diseases would take today, with our world-wide commerce, with our metropolitan and cosmopolitan cities, and with the constant commingling of the peoples of all lands, were it not for preventive measures?

MAP-CHANGING MEDICINE

Throughout the history of the ages one may read of great changes in the maps of the earth that have resulted on the one hand from the ravages of disease and on the other from the discovery of methods of combatting it.

We see the "glory that was Greece" depart because of the terrible toll exacted by malaria; we see a Panama Canal made possible because of the knowledge of the causation of yellow fever that came to us through the patient and heroic work of a group of army surgeons; we see cities like Havana and Rio de Janeiro transformed from pest-holes into municipalities where epidemic diseases are under control.

Today thousands, nay millions, of human souls living between Cancer and Capricorn are being freed from the thralldom of those terrible visitations that came periodically only a few years ago. Africa is rising up against the terrible sleeping sickness and the insidious malaria that have made it the "Dark Continent" for generations without number.

Wherever we turn we find places where once a man gambled with death when he visited them being converted into regions where good health conditions exist. Preventive medicine everywhere, and in the tropics in particular, is writing a new geography of inhabitable territory and of commercial opportunity.

Where yesterday the barriers of disease were up against the peaceful and resource-developing invasion of capital and enterprise, there today is found health and happiness and prosperity. Where yesterday a man going to the tropics, even for a short stay, was bidden good-bye by his friends as one who stood an even chance of never returning, today men and women go there for long periods; and in some places are quite as safe as at home, and in hundreds of others only a little less so.

HOW IT ALL HAPPENED

Truly the story of how all this has been brought about is the world's most splendid exemplification of the proverb that truth is stranger than fiction. For hundreds of years man stood helpless and appalled in the face of the onset of great epidemics. He saw millions of his fellow-beings visited with deaths more horrible than ever torture chamber could invent, but not knowing whence the affliction came or whither it went. He surmised and guessed, and finally saw a certain relation between dirt and disease, and gradually the elimination of dirt checked the ravages of some epidemic diseases.

Then came the microscope with its discovery of infinitesimal worlds, and with it Pasteur and his discovery of the relation between bacteria and disease. One by one new germs were discovered, and soon medical men came to understand the methods of the transmission of most of the epidemic diseases of temperate climates.

Still no one knew the cause of the epidemic diseases most characteristic of the tropics, and without this knowledge no satisfactory superstructure of preventive tropical medicine could be reared. Tropical humanity was attacked by myriads of enemies so subtle that men did not know even that they existed, and yet so terrible that the carnage of the world's battlefields paled in comparison.

For centuries on end men had been seeking after the truth of the causation of yellow fever, bubonic plague, sleeping sickness, and allied diseases. Some of them had nearly guessed it. Sir Henry Blake tells of having seen a medical work in Ceylon, some 1,400 years old, which charged the mosquito with being a carrier of malaria. The word canopy itself was brought into the language from a Greek word meaning gnat.

WHY THE CAT WAS WORSHIPED

There were many strangely close guesses at the cause of disease in the early history of the human race. Far back in Egyptian history the people came so near to guessing the cause of plague that they made the cat a sacred animal. They noticed that where there were cats there was no bubonic plague, and if they had only stopped to think a little further they might have seen that where there were cats the rats were scarce. But this relation did not strike them, so they went on worshipping the cat, and thinking that it was the animal's supernatural power that saved them from contracting plague.

The honor of having written the first modern work charging the mosquito with being a responsible agent in the spread of yellow and malarial fevers belongs to an American, Dr. Nott, of Mobile, Alabama. In 1848 he published a treatise upon yellow fever in which he charged the mosquito with the crime of spreading these diseases. A little later Dr. Louis Beauperthuy, studying an epidemic of yellow fever in Venezuela, also laid the

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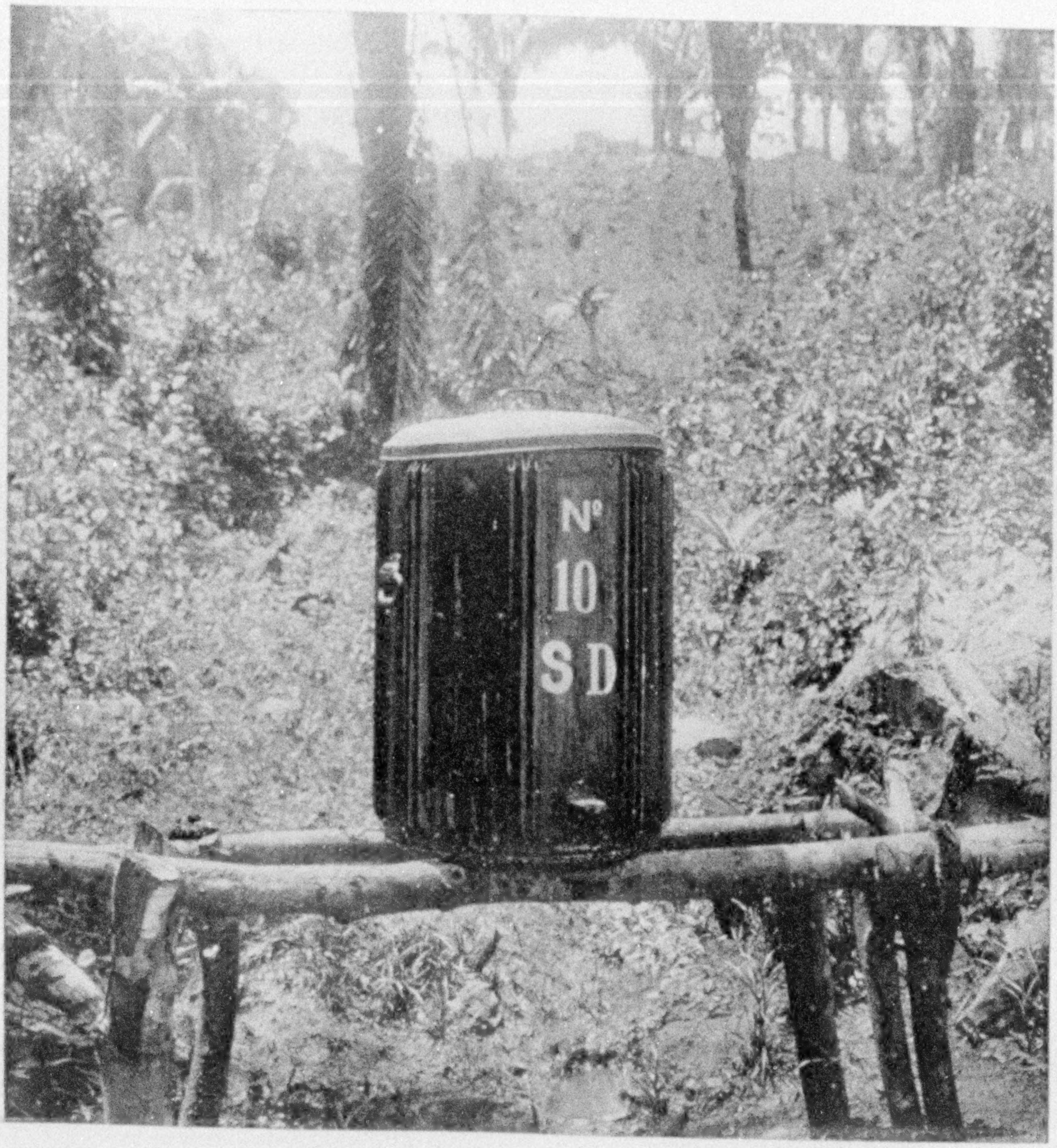


FIGHTING THE PANAMA MOSQUITO WITH OIL

These sanitary drip-barrels automatically spread oil, drop by drop, over pools, streams, and marshy places, thereby preventing the mosquito from breeding in the water. "He (Ross) proved beyond any peradventure that the Anopheles mosquito is the intermediate host, and that no one can contract malaria except he be bitten by a mosquito which has previously bitten a person suffering from that disease" (see page 347).

blame upon the mosquito, and charged that it introduced a poison similar to snake venom into the human system through the biting process.

Step by step a closer approach to the truth was made, and in 1883 Sir Patrick Manson demonstrated that the mosquito was the intermediate host of the blood parasite *filaria*.

But it was not until Sir Ronald Ross arrived upon the scene with his investigations that the real truth of the principle of insect-borne diseases came to be understood. Prior to this Laveran had succeeded in isolating the germ of malaria; and, building upon this foundation, Ross labored to ascertain the exact relation between man and the mosquito.

His efforts were rewarded with success. He proved beyond every peradventure that the Anopheles mosquito is the intermediate host, and that no one can contract malaria except he be bitten by a mosquito which has previously bitten a person suffering from that disease.

In telling of his achievement, Ross declared: "The exact route of infection of this great disease, which annually slays its millions of human beings and keeps whole continents in darkness, was revealed. The minute spores enter the salivary gland of the mosquitoes and pass with its poisonous saliva directly into the blood of man. Never in our dreams had we imagined so wonderful a tale as this."

But even Ross little dreamed when he made his great discovery that the wonderful tale his astute mind had unfolded was to be but the beginning of a long series of related discoveries which would end entirely humanity's helplessness in the face of epidemic diseases.

The medical world had hardly ceased to wonder at the work of Ross when Reed, Carroll, and Lazear, of the U. S. Army Medical Corps, proved—Lazear at the cost of his life and Carroll at the cost of a severe spell of yellow fever—that the Stegomyia mosquito plays the same role with yellow jack that the Anopheles does with malaria.

HOW MOSQUITOS, RATS, AND FLIES SPREAD DISEASE

Then came others with their discoveries that bubonic plague is transmitted by fleas carried on rats and ground-squirrels; that sleeping sickness is carried and transmitted only by the tsetse-fly; that dengue is carried by other species of mosquitoes, and more recently that the body louse is the culprit which carries typhus from man to man.

Likewise has our increasing knowledge of the principles of the spread of typhoid fever led us to the point where the only reason we contract it is because some one has been careless with the excreta that comes from persons having typhoid in their systems. We know that milk is a frequent vehicle of infection. We know, through the researches of Dr. Howard and his associates, that the house-fly, which he has christened the "typhoid fly," constantly furnishes free transportation for germs that are seeking an entrance to some human system. We know how much water has to do with its dissemination, from the fact that in cities in Europe where there is a perfect water supply the number of cases is seldom above ten per hundred thousand people, and in America seldom above twenty per hundred thousand, while in cities where there is impure tap water the rate goes up to two hundred and even three hundred per hundred thousand population. It has come now to be accepted by sanitarians that in any average city of considerable population and ordinary sanitary regulations all sickness from typhoid fever over twenty cases per hundred thousand inhabitants is attributable to the water.

How much the fly has to do with the spread of the disease is illustrated by the experience of the army encampment at Jacksonville during the Spanish-American War. The lime that was carried on the feet of the flies from the latrines to the mess-tables showed that nearly all of the hundreds of cases of typhoid that infested the camp were caused by germs carried to the food of the men from the latrines. The fly has been caught red handed in divers instances. Some of them have been permitted to walk over infected material and then to walk over culture plates. In every case almost every point on which they set their feet brought forth a colony of typhoid germs. In other cases flies have been caught and given a bath in sterile water, with the result that a single bath has brought a hundred thousand germs from the body and legs of one fly.

THE SAD HISTORY OF "TYPHOID MARY"

There is one class of people who are a permanent menace to humanity. About 2½ per cent of those who contract typhoid fever live to become germ carriers. The germs like them so well that they agree to dwell in peace and harmony with their hosts; but as they go about they spread a trail of typhoid fever. An illustration of this is to be had in the case of that celebrated woman, "Typhoid Mary." She had suffered an attack of typhoid fever, but got well. Then she returned to her duties as a cook. Six cases of the disease broke out in the family, and she left and was lost sight of for a long time. Although Dr. Soper tried to trace her, it was not until a long time afterward that she was found—this time in service in a family in a small town in New Jersey. Then her history was traced, and it was found that during the time between her two appearances she had cooked in five other homes, and in each and every one she gave the inmates the disease—27 cases in all.

TYPHOID VACCINATION

But while all sorts of prevention in the line of sanitation help to check the spread of the disease, the final blow was given to it by the discovery of the principle of inoculation for typhoid. The germs of typhoid are grown in beef broth, and when they number millions for every thimbleful of the broth they are killed by the application of heat. The dead germs are then injected into the blood with a hypordermic syringe, and three doses of these dead germs are nearly always enough to make the body immune from the invasion of live germs; perhaps because they do not like to dwell amid the sepulchers of their race.

The success of vaccination for typhoid has been remarkable. In the history of hundreds of thousands of cases only a third as many vaccinated people have contracted the disease as unvaccinated people. Furthermore, the disease terminates fatally only a third as many times with vaccinated people as with unvaccinated ones. In other words, vaccination against typhoid divides the chances of dying from the disease by twelve.

Typhoid fever, however, is not so much of a tropical scourge. It does flourish in semi-tropical countries and among white people who go to the tropics. The natives seem to be rather immune from it, mayhap because the typhoid germ refuses to dwell in the same body with amœbic dysentery germs, with which so many tropical people are afflicted. But the lessons which our studies of the principles of the spread of typhoid fever have taught us fit in so beautifully in tropical campaigns to master dysentery and cholera that they are almost as serviceable in the tropics as they are in the temperate zones. The fly carries the germ of cholera and of dysentery just as it carries the germ of typhoid. These germs use the same vehicles and travel in the same general way from the intestines of one person to the mouth of another.

The sum of all of these discoveries is that they place in the hands of mankind the power to overcome the most terrible diseases with which the tropical world has been afflicted.

CAPITALIZING THE DISCOVERIES

And now, having looked far into the past to see the vast need there has been for such discoveries, and into recent history to learn something of how they were made, let us journey around the tropical world today and see how they are being applied.

Of course, we go first to Panama, for there they are being applied on a scale that is extensive and with a thoroughness that shows the possibilities of such application. Indeed, no factor for putting the new science of tropical medicine to the most rigid test is wanting there.

Before the United States took control and Colonel Gorgas began to apply the lessons that had been learned in Cuba, yellow fever was endemic, malaria almost universal, bubonic plague not exceptional, and smallpox not infrequent in its occurrence. Things had been so bad that they defeated the French in their efforts to dig the Panama Canal, and when the despair of the bubble-burst boom days settled like a night over the wrecked hopes of the French failure, conditions grew even worse.

Colon was a swampy mire of filth which bade warm welcome to every germ that came along, and extended hearty hospitality to every mosquito and flea that traveled that way, bidding them all to "be fruitful and multiply"—an invitation as heartily and as appreciatively accepted as it was extended.

Panama offered a haven to every disease borne upon the wings of commerce. The water-carriers who peddled water from contaminated springs became the

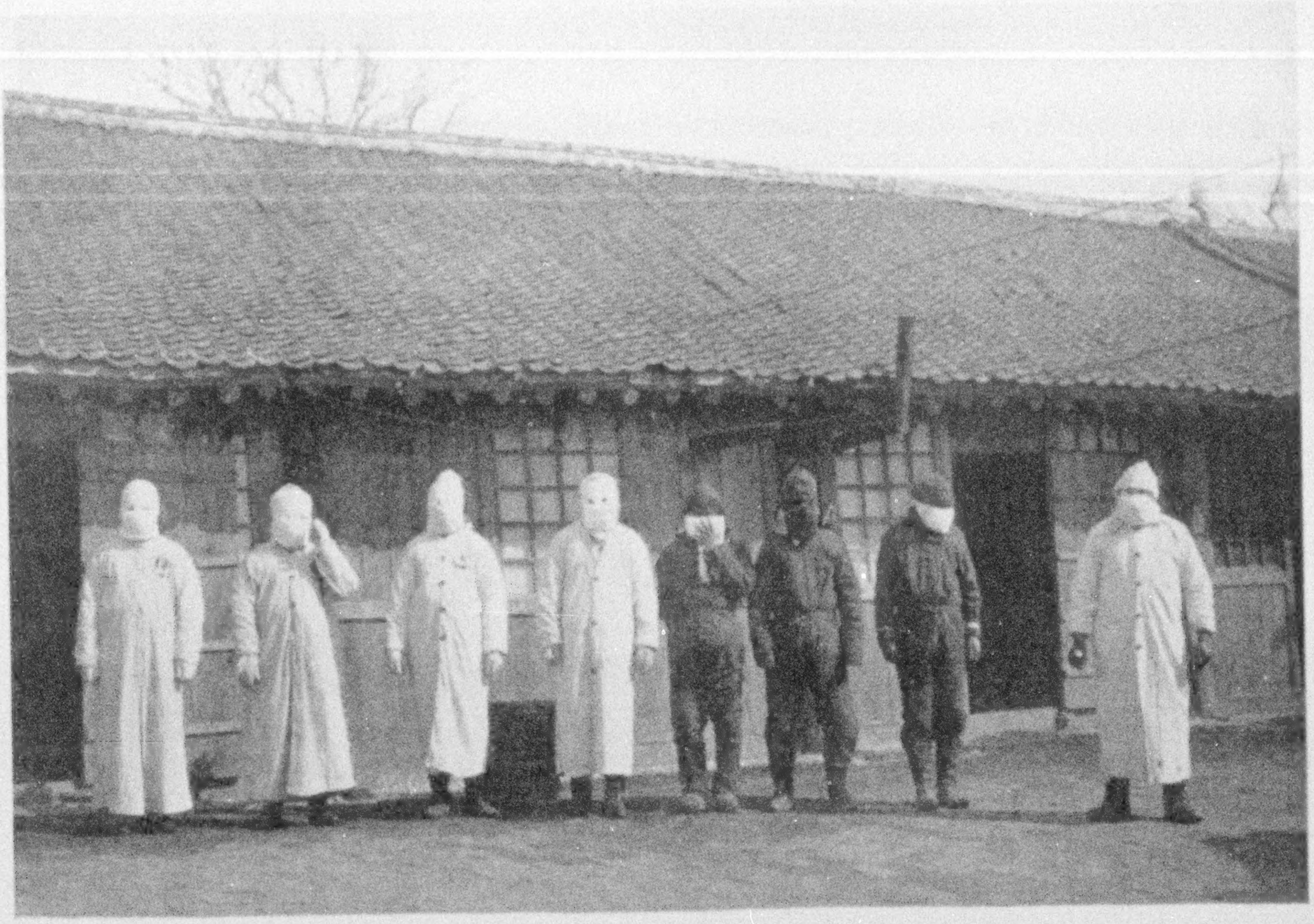


Photo from American Red Cross Bulletin

THE PLAGUE IN CHINA

American Red Cross Relief Corps, showing method of protection against infection. The variety of plague during this epidemic was that known as pneumonic, and to guard against infection, both the skin and the air passages, such as the mouth and nostrils, had to be closely covered with antiseptic wrappings.

allies of suffering, and the result was a death rate of vast proportions. Stretching across the country between the two cities lay a vast expanse of untamed jungle and undrained swamp that was a paradise to the mosquito world. And then the masses of the people were hopelessly ignorant of all things sanitary and as careless as they were ignorant.

To add to the unlovely state of affairs, the ships that came in from South and Central America carried diseases with them. And so it was that one might look over the entire tropical world in vain for a place to put the new science to a severer test.

The United States was not willing to undertake the sanitation of the Canal Zone without including Panama and Colon as a part of the sanitary district, and so it was insisted that Uncle Sam should have perpetual sanitary control over the two major cities of the Isthmian republic, and Panama agreed.

After the international problems were settled Colonel Gorgas and his aides got busy. They built for Panama and Colon up-to-date sewer and water systems, the cost thereof to be returned to the United States in small annual payments. They cut down 16 million square yards of brush a year, drained a million square yards of swamps, cut 30 million square yards of grass, maintained nearly three million feet of ditches, emptied 300,000 night-soil cans and a million garbage cans, fumigated 11 million cubic feet of residential space, and did other things in proportion in the Canal Zone and in equal proportion in the two terminal cities.

THE MOSQUITO IN THE COURT OF APPEAL

For awhile the rigid methods of the Sanitary Department met with success, and the morbidity and mortality rates both showed a remarkable decline. But then came an epidemic of yellow fever.

The mosquito, tried and convicted in the researches of Ross and Reed, and with that sentence confirmed by the sanitary work in Cuba and elsewhere, now came to appeal to its final court for a reversal of judgment. He claimed an alibi, and he proved to the minds of thousands that he was not responsible. Hundreds tore off the screens from their houses and thousands pronounced the criminal a maligned individual. Indeed, the revulsion of sentiment went so far that men in the highest places were lining up on the side of the mosquito.

But Colonel Gorgas remained firm, and finally former Governor Magoon came upon the scene to back him up, and to give him a chance, as the counsel for the prosecution, to prove again the guilt of the accused. For three months the trial went on, and as soon as the yellow-fever mosquito was banished the epidemic terminated, and Colonel Gorgas was able to offer $50 for each yellow-fever mosquito that could be brought him. Thus for the last time in all medical history the mosquito had his day in court and was finally and forever pronounced a creature beyond the pale of the law.

Rats and mice came in for the same stern measures of repression, and the result has been that where yesterday the grim specter of death held Panama as a favorite abode, today it has to seek other regions for its preferred haunts. Where, at the beginning of our work at Panama, all the dangerous diseases in the catalogue held high carnival and gave little heed to the despair of the people, today one may see there a sort of combination between a national tropical park and an international tropical health resort.

Every possible difficulty in the way of the accomplishment of this end was encountered when the work began, and the triumph has been as inspiring as the situation seemed hopeless.

THE VICTORY OVER YELLOW JACK

What the United States has done in Panama is no more than might have been expected in the light of what it had done in Cuba. There Colonel Gorgas, with the support of Gen. Leonard Wood, faced a terrible yellow-fever situation. In 47 years more than 35,000 residents of Havana alone had died of yellow jack. In a year or two yellow fever was banished from the island, bubonic plague was gotten rid of, and smallpox came under control.

The experience of Cuba and Panama has been duplicated throughout the tropical world wherever the lessons of those sanitary triumphs have been enforced with proper vigor.

Consider Brazil, which in times past had come to be regarded as the natural habitat of yellow fever. In the year following the discovery of the mosquito's part in the transmission of that disease, there were 35,000 deaths from it. The wonderful influx of young men from the outside world, the "conquistadors of a new era of commerce," was about to be checked and the development of the great tropical republic set back for years. But Brazil would not have it so.

Rio got busy, a perennial clean-up day was ordered, and where, in its harbor, ships once had rotted because their crews had died from yellow fever and none could be secured to replace them, there soon was not a case to be found. Thus Rio, Santos, and other Brazilian cities have become health resorts by contrast.

THE FIGHT AGAINST MALARIA

What has happened with yellow fever has not happened with malaria simply because the world does not dread it as much and will not make the thorough fight against it that has been made against yellow jack; and yet malaria has been a greater curse to humanity through more centuries than yellow fever has ever been.

Where yellow fever has slain its hundreds, malaria has slain its thousands. It has not visited mankind as a grim messenger, smiting whole nations today, and tomorrow disappearing; rather its onset has been so gentle and its reign so persistent and so general that the public mind has never been wrought to the pitch necessary to its eradication.

The fact that it results in less direct suffering and fewer proportionate direct fatalities than yellow fever has held the fears of the people in check and has permitted malaria to remain endemic in al-

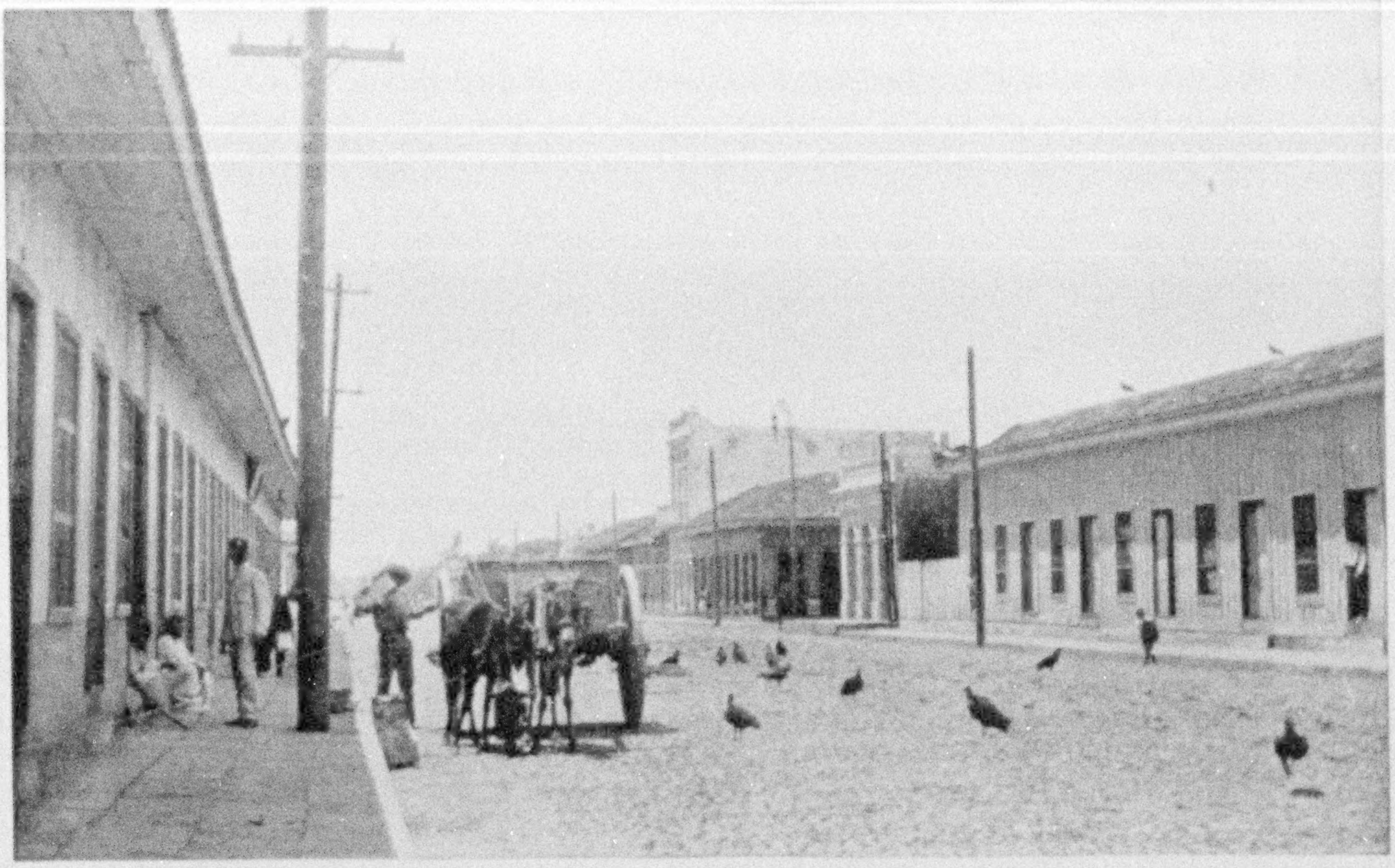


Photo from A. W. Cutler

PRIMITIVE SANITATION: BUZZARDS AT VERA CRUZ FOLLOWING A SCAVENGER'S CART

These birds are protected by law and may be seen strutting sedately about the streets in every direction. They are largely responsible for the present excellent sanitary condition of Vera Cruz, now looked upon by the Mexicans as a health resort.

most every country in the world. It plies its nefarious trade day in and day out, year in and year out, killing its millions of souls, some directly, but more through undermined constitutions which have permitted other diseases to be written upon the death registers.

We do not have to travel to the tropics to see humanity living in close contact with the malarial mosquito and apparently indifferent to the ravages of the disease. Dr. L. O. Howard, perhaps America's foremost authority in economic entomology, estimates that the financial loss inflicted at home upon the people of the United States by malaria amounts to a hundred million dollars a year.

Sir Ronald Ross gives an idea of the extent, economic consequences, and geographical influence of malaria when he says that it "is important not only because of the misery it inflicts upon mankind, but because of the serious opposition which it has given to the march of civilization in the tropics. Unlike many diseases, it is essentially endemic, a local malady, and one which unfortunately haunts more especially the fertile, well-watered, and luxuriant tracts—precisely those of greatest value to man. There it strikes down not only the barbaric indigenous population, but, with still greater certainty, the pioneer of civilization, the planter, the trader, the missionary, and the soldier.

"It is therefore the principal and gigantic ally of barbarism. No wild deserts, no savage races, no geographical difficulties, have proved so inimical to civilization as this disease. We may say that it has withheld an entire continent from humanity—the immense and fertile tracts of Africa; what we call the Dark Continent we should call the Malarious Continent; and for centuries the successive waves of civilization which have flooded and fertilized Europe and America have broken themselves in vain upon its deadly shores."

Africa affords no statistics of the widespread prevalence of malaria, but in India, which at its worst is better than Africa, nearly five million souls died of fevers in a single year recently, and the

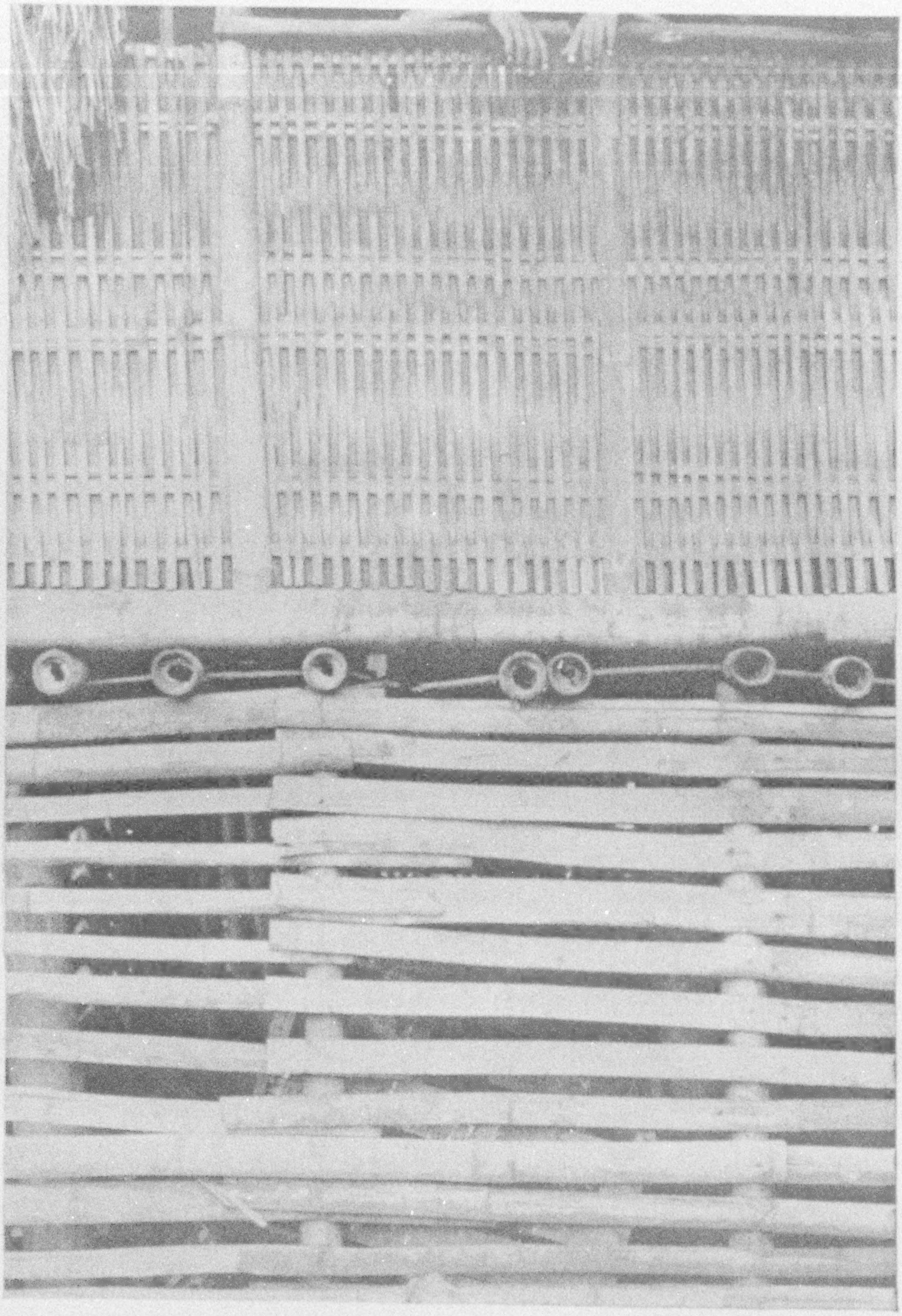


Photo from Bureau of Insular Affairs

A SOURCE OF PLAGUE INFECTION

These holes in the bamboo house-supports in Manila were found to afford shelter and nesting-places for rats, and so became dangerous to the public health of the city, for bubonic plague is transmitted by fleas carried on rats. How this danger was removed is shown in the picture on page 354.

majority must have been directly or indirectly victims of malaria.

But where steps as stern against malaria are taken as are required for the eradication of yellow fever, the results are magnificent. In Italy an anti-malarial campaign cut down the number of deaths from 16,000 a year to 4,000. In Greece, on the plains of Marathon, in 1906, 90 per cent of the sickness was due to malaria; in 1908 only 2 per cent of the sickness was due to it.

The wonderful results attained in fighting malaria at Ismailia, on the Suez Canal, surpasses anything that has been done in any part of the world. In 1900 there were 2,284 cases of malaria in that town. Sir Ronald Ross was called there to consider methods of banishing the disease, and laid out a program in that direction. In 1901 the number of cases fell to 1,990; in 1902 to 1,551; in 1904 to 90; in 1905 to 37. Since that time there have been no cases reported except such as were infected before visiting Ismailia. The malarial mosquito was absolutely exterminated there—something which probably has not been done in any other part of the earth.

One might go on indefinitely citing cases where cities and districts have arisen in their might to put an end to malaria and with magic results.

HOOKWORM DISEASE VANQUISHED

If vast consequences have grown out of the solution of the mysteries of yellow fever and malaria, they are probably no greater than are destined to come to the people of tropic and semi-tropic regions through the mastery of the hookworm.

Around the earth there stretches a belt 66 degrees wide, embracing 47 countries and an area of 15 million square miles, in which there lives a population of nearly a billion people. This belt is the hookworm belt of the world. How many cases of this distressing and strength-wrecking disease there are in this vast territory cannot be estimated with any degree of approximation.

In 1904 some 90 out of every 100 of the working population of Porto Rico had the disease. In Colombia 90 per cent of the people living between sea-level and the 3,000-foot level were suffering from it. Fifty per cent of the people in British Guiana are said to be afflicted. Not less than 1,800,000 of the people of India are reported as having the disease, and in the southern part of China it is estimated that three out of four people are sufferers.

The economic loss involved is beyond estimate. In Porto Rico the physically sound coffee-picker picks from 500 to 600 measures of coffee a day; scores of those suffering from hookworm disease can pick only from 100 to 250 measures a day. In some regions it is estimated that not more than 33 per cent of the natural efficiency of any force of men can be exercised because of the terrible problem of hookworm disease.

Yet hookworm disease is about the most easily mastered of all the diseases in the category. Its cause is easily demonstrable to the laymen, even to the ignorant layman, because he can see, without the aid of a microscope, the little hair-line worms that cause it. Its spread is easily checked, because the wearing of shoes and a little care against soil pollution is all that is demanded.

A SIMPLE AND EASY CURE

It is easily cured, because in most cases simply a dose of epsom salts, followed by a dose of thymol, and that in turn by another dose of salts, is effective. Thymol is made from the thyme of the garden, and is just about as simple and as harmless in its action as the epsom salts. If the first treatment does not answer, the second one usually will. Furthermore, the disease is one that lends itself admirably to the getting of quick results. It converts a lazy, sickly, good-for-nothing boy or girl into a sprightly, energetic one in the course of a few weeks.

That has been the secret of a major portion of the success of the Rockefeller Sanitary Commission in its work of ridding the South from the disease. The results were so striking that the States and the counties were glad to help along the task. Tens of thousands of so-called "poor white trash" have been cured of it,

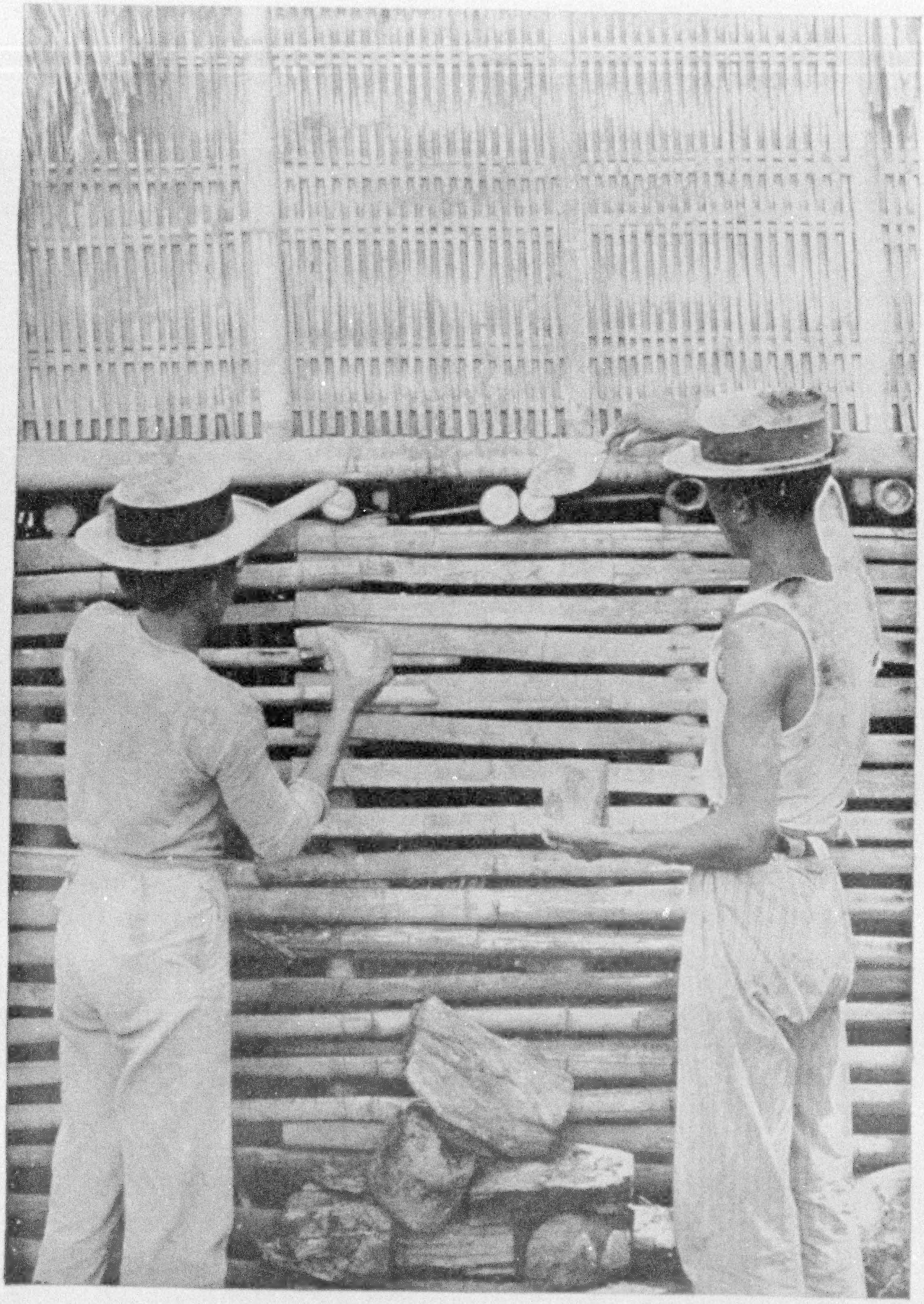


Photo from Bureau of Insular Affairs

PREVENTING PLAGUE IN MANILA

In order to guard against infection spread by rats, the sanitary authorities of Manila organized a special corps whose duty was to seal with cement all openings which could serve as rat refuges. Compare photo on page 352.

and the results are so visible that the work is spreading everywhere. The fight of the commission and its forces is to establish sanitary privies in the country, and to teach the children and their parents that either the prevention of soil pollution or the wearing of shoes will prevent the disease, and that both together insures one against it.

The remaining problem is one of getting the people who have the disease to take the salts-thymol course of medicine. In Porto Rico, Dr. Bailey K. Ashford and his associates have cured well nigh half a million cases, and the work is still going on to the extent of some twenty thousand cases a year.

The entire work of Dr. Ashford in Porto Rico has been a wonderful success. He went there with a death rate as high as that at Panama. The people were hopelessly ignorant, wholly indifferent to sanitation, and without a single idea of the cause of ordinary diseases that are contracted by infection. But with all that, the principles of sanitary science that were laid down in Cuba triumphed in Porto Rico as brilliantly as they have triumphed anywhere else in the world. Notwithstanding the fact that they were handicapped for funds and had hookworm disease added to their list of troubles, Dr. Ashford and his aides were able to bring about a death rate that is lower than that of Panama itself today.

WONDERFUL RESULTS IN THE PHILIPPINES

What happened in Porto Rico finds something of a counterpart in the Philippines. When the Americans took possession of Manila the death rate averaged 46.11 a thousand during a period of four years. By strenuous work and a faithful adherence to the principles of sanitation there were laid down in Cuba, the death rate has been forced down until it is now about 35 per thousand.

A death rate reduced in the same proportion in the United States, with our present population, would mean a saving of 1,100,000 lives annually in this country. They were able over there to make a showing of a death rate of only 4.84 per thousand among the employees of the Philippine government. They had cholera knocking at their doors all the time and several times running past their defenses. But they have kept hammering away year in and year out, and have set a record in public sanitation there that is a fit companion-piece to the work at Panama and Porto Rico.

They have cut down the number of new cases of leprosy each year from 700 to 200, and have reduced the number of lepers in the island from 5,000 to 2,000. They had a hand in proving that beriberi is a disease caused by a prolonged diet of polished rice. The phosphorous in the pericarp of the rice is needed by the system and its absence is responsible for the disease. Chickens fed constantly on polished rice contract the disease, while those fed upon unhulled rice never do. But perhaps the most striking achievement in the Philippines has been the practical abolition of smallpox. When we went into the Philippines there were 40,000 deaths a year from the disease, where today there are only about 300 a year. Vaccination triumphed.

THE NEW ERA

Throughout the latitudes where insect-borne diseases reign a new sentiment has arisen which promises, under the stress of persistent campaigns of education, to sink deep into the public mind. Its motto is the banishment of these diseases.

The fundamental principles of the fight are expressively laid down in simple terms like these: "No mosquitoes, no malaria, no yellow fever, no dengue. No fleas, no bubonic plague; no lice, no typhus; no tsetse fly, no sleeping sickness; no ticks, no spotted fever." Wherever governments have power to get back of these campaigns and compel the people willy-nilly to adopt the proper measures, remarkable results can be obtained.

Not only does sanitary science open up the tropics for the benefit of man himself, but for his domestic animals as well. When the United States took over the Philippines there had been introduced a terrible epidemic among cattle, carabao, and horses. The disease promptly was diagnosed as the terrible rinderpest. It killed untold thousands of head of horses, cattle, and carabao, in some places nine out of every ten dying from the disease.

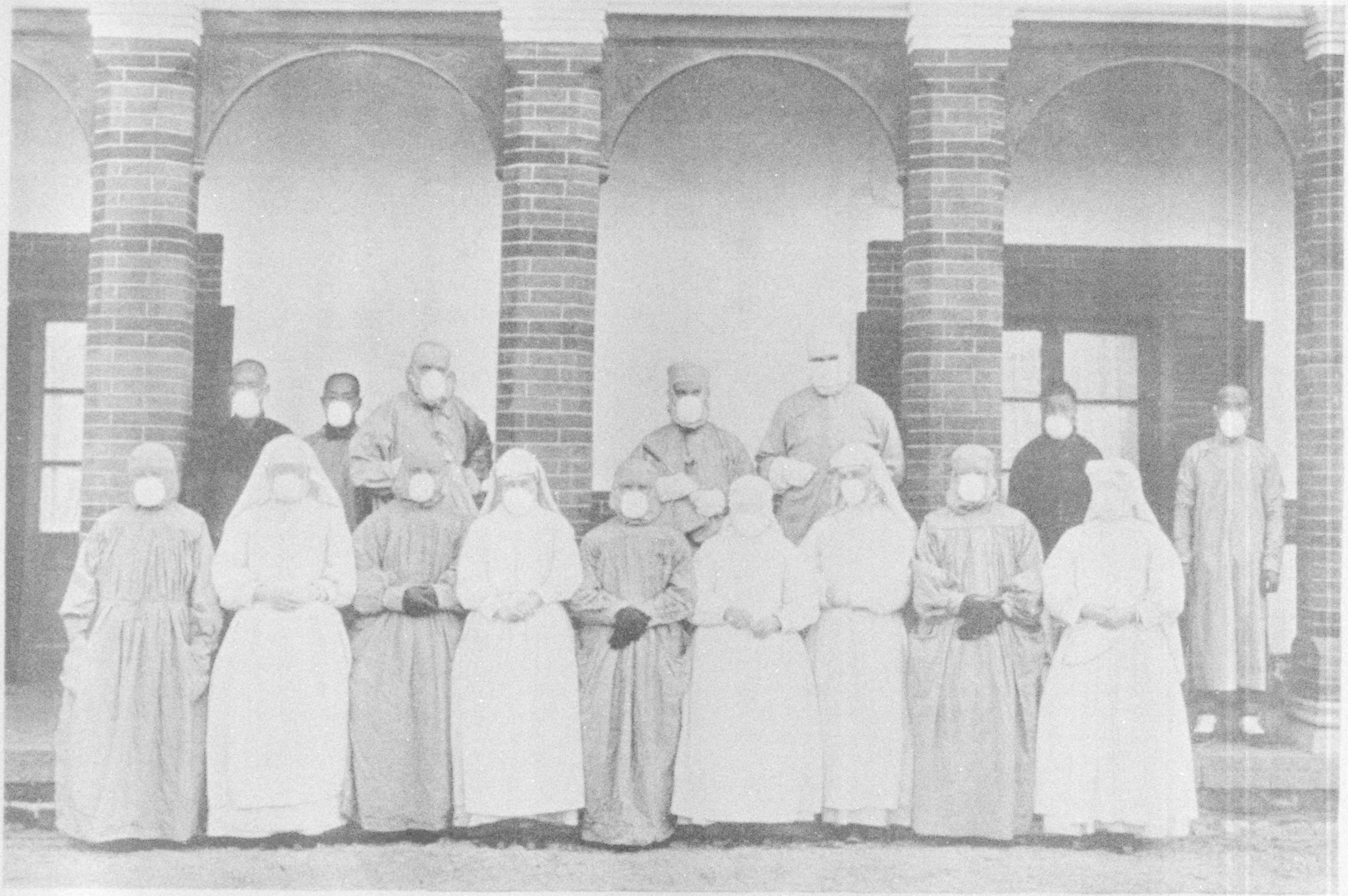


Photo from Catholic Foreign Missionary Society of America

MISSIONARIES FIGHTING THE PLAGUE

"When we see Naples, in the seventeenth century, as helpless as a new-born babe in the grip of a plague during which 380,000 souls perished in six months; when we see Constantinople, in 1812, with 144,000 deaths; when we see London, in the days of the great plague, with 70,000 of its population carried off; when we go back to China and behold a few short years in the fourteenth century with a 'black death' mortality record of 13 million souls; . . . . not till then can we begin to appreciate what it all means" (see page 344).

Prompt restrictive measures were taken, a quarantine was set up, vaccination against the disease was resorted to, and 10,000 carabao were imported from Asia to take the places of the ones the small farmers had lost. All these measures promptly served to put an end to the epidemic and the Philippines were once more safe from a live-stock famine.

With the mastery of the secrets of the tsete fly and its fatal bite on live stock, England has set out to render Africa inhabitable to horses and cattle wherever the English flag floats over it. Anthrax fever is going the same way, as is the fever caused by the cattle tick. Perhaps as much has been done in the direction of rendering the tropics habitable to our domestic animals as has been done for ourselves.

In the generations to come, there can be no doubt that with a sanitary science that is broad enough to reach both man and beast, the great plains of the highlands in the tropics will be converted into vast cattle ranches, where cattle can be brought to the stock cattle stage and then shipped to the temperate climates for feeding and finishing, thus adding to the world's meat supply to the extent of billions of pounds.

THE ECONOMIC VALUE OF THE CHANGE

The discoveries that have brought about this era of control of tropical diseases have a deeper significance than would appear upon the surface. Not only do they bring health and at least a greater degree of happiness to the hundreds of millions of human beings who live in the tropics, but also to the overcrowded temperate zones a prospective relief from the great food shortages that have been impending.

We find the price of meat growing higher every year as the grazing areas of the beef-producing countries have been encroached upon for farming purposes. Each generation finds the corn and the wheat areas of the world growing smaller in proportion to its population, and it has become evident that if humanity is to continue to be well fed it must look to the tropics.

Here, indeed, lies the hope of the world's future food supply. Untold millions of tons of provender might be raised where now dense jungles of unprofitable vegetation grow. What the United Fruit Company has done with the banana may be repeated with innumerable crops. Banana flour might take the place of wheat flour, and so on down through the category.

Meanwhile, with the restrictions imposed by disease removed, tides of immigration might set into the tropics, populating them with people who would cease to be a drain upon the food supplies of the temperate zones and become, on the contrary, contributors thereto. Tropical deserts may be irrigated, tropical swamps drained, tropical jungles tamed, and millions of acres of the richest land on earth added to the productive areas which feed and clothe the world. These times are coming not rapidly, but with a stride certain and inevitable as the world's population is increasing.

And what benefits they must bring to the race! New blood in the tropics is needed. The suns of centuries have burned out much of the initiative, the easy methods of gaining a livelihood have taken out much of the thrift, and the lazy ways of the tropics have eliminated much of the natural love of cleanliness of the people. New blood coming in may change these things to a very appreciable degree, and an even newer and better era of public health may ensue.

A CALL TO DUTY

When one contemplates what the heroes of medical science have made possible, and reflects that they have put into the hands of humanity powerful weapons of knowledge with which to combat our most deadly diseases, he cannot avoid feeling that their efforts will have been partially in vain unless all humanity is induced to aid in the work of capitalizing them.

The world's death rate is probably about thirty per thousand. He who clips just one from that thirty saves more than a million and a half of lives a year. In a single quarter of a century the United States clipped five from its death rate, and if the world could only do as well in the next quarter of a century as the

United States has in the past 25 years, a population equal to that of the Republic of China might be saved from premature graves.

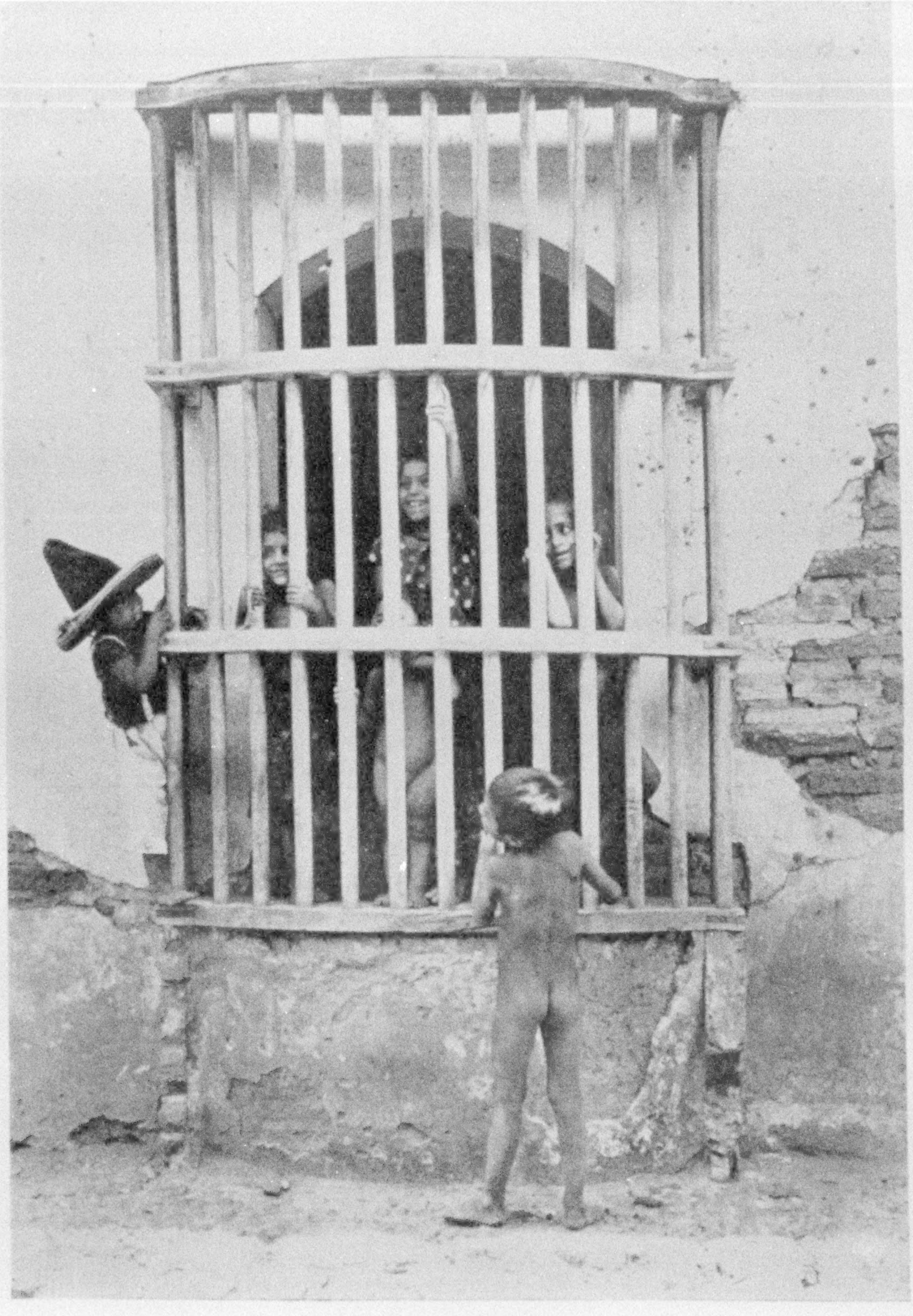
Surely such consequences challenge the support of all mankind, and call for an army of volunteers who will go out into the world and preach to the people that cleanliness is next to godliness, and if it lacks the power to produce life, it possesses the power to prolong it. Such a campaign would be fraught with enormous economic, geographic, and humanistic consequences, but it would require long years of patient work. For if we in this enlightened America, with our boasted universal education and our splendid free institutions, cannot successfully combat such barbaric and unnecessary diseases as tuberculosis and typhoid fever, it certainly would be too much to expect that the ignorant masses of the tropical regions would accept and live up to these preachings in a few months.

There is one redeeming feature about the governments which lie within the tropics. While in America the people order the government to do and it is done, in the tropics the government orders the people to do and it is done. Whatever else free institutions bring in the way of blessings, they do not yield the same prompt results in protecting the public health that we find when tropical governments decide to act. And therein lies the most hopeful note in the movement, now a little more than a decade old, for banishing epidemic disease from the tropics.

A MEXICAN INDIAN HOME

Photo from A. W. Cutler

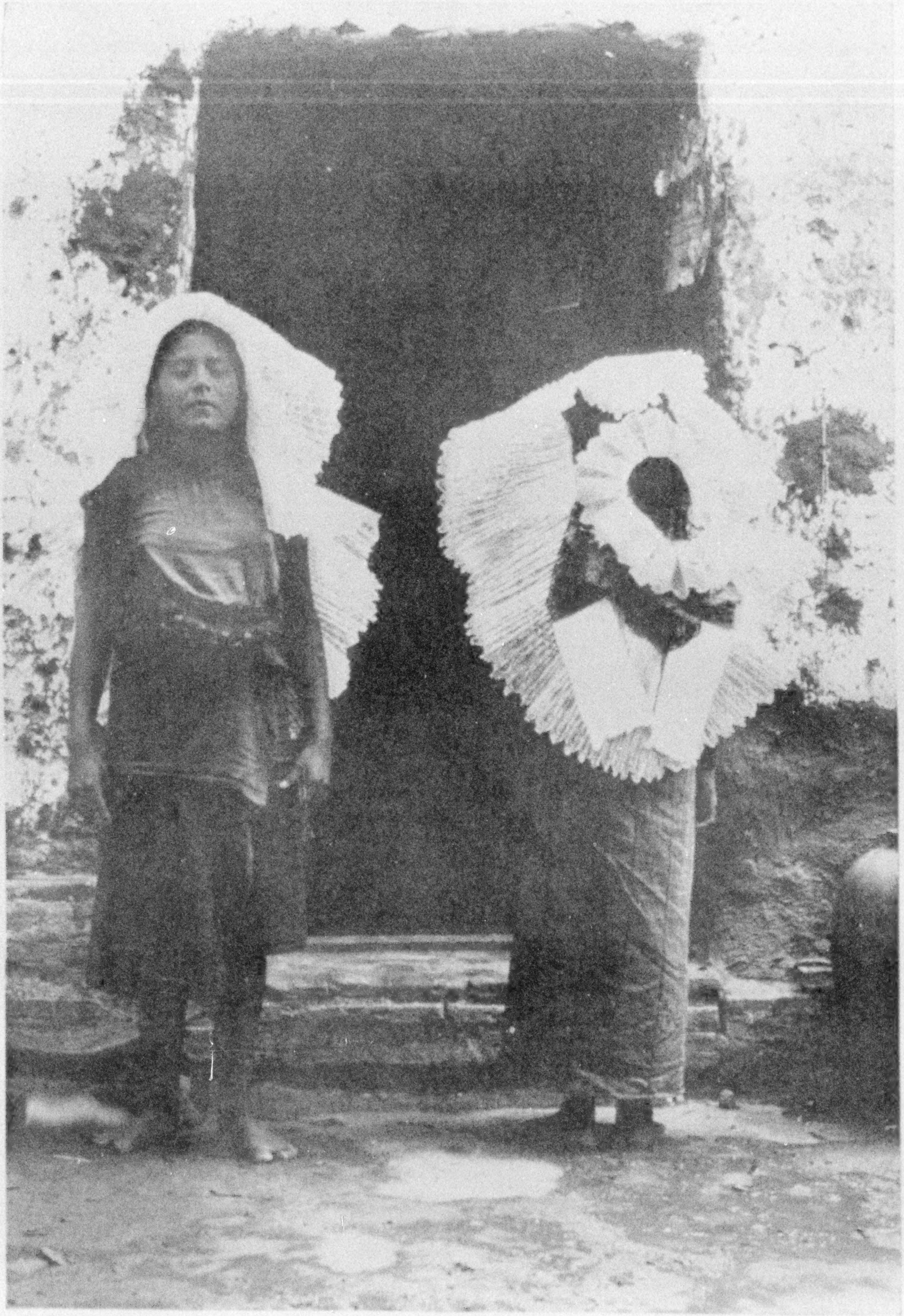
Typical family of Tehuana Indians at Tehuantepec, Mexico. The sides of the hut are made of a reed and the roof is of red tile. The naked boy is very typical, as also is the pig



PRIMITIVE BUT HAPPY

Photo from A. W. Cutler

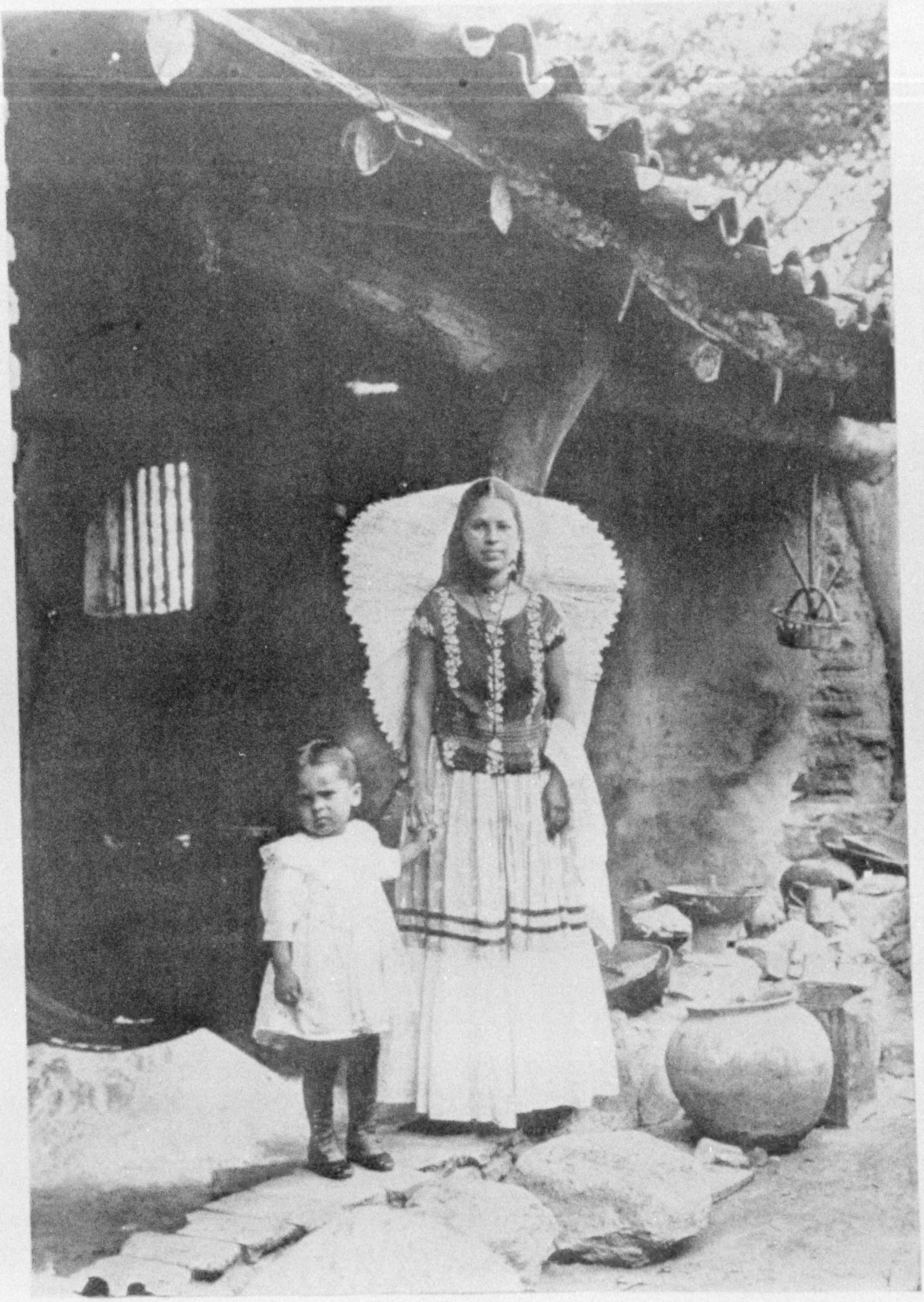
How the little Mexican Indian children play around the wooden-barred windows down at Tehuantepec. Children under 12 are frequently seen without clothes. Tehuantepec is in the State of Oaxaca, about 60 miles from the border of Guatemala.



A LAMP-SHADE HEAD-DRESS

Photo from A. W. Cutler

A front and rear view of the famous head-dress worn only by the Tehuana Indians of Mexico

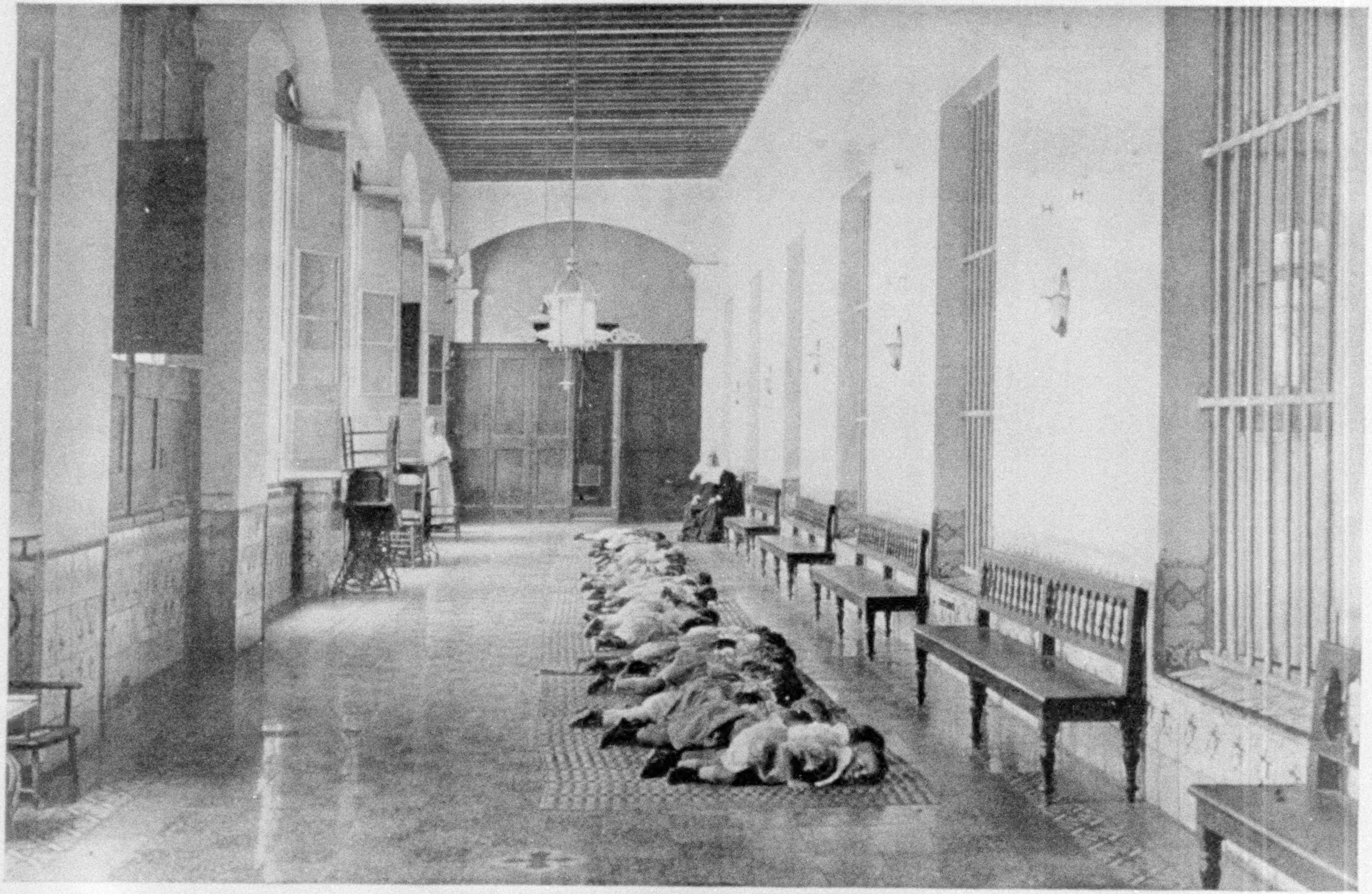


A TEHUANA INDIAN BELLE

Photo from A. W. Cutler

The curious head-dress is worn by the Tehuana Indians of Tehuantepec, Mexico. It consists of a huge fan-shaped mass of stiffly starched ribbons and lace.

XUM



THE ORPHANS HAVE THEIR NAP

Photo from A. W. Cutler

Daily *siesta* of the little ones at La Beneficencia, one of the orphan asylums of Mexico. Mats are laid on the red-tiled floor of a cool corridor for this purpose

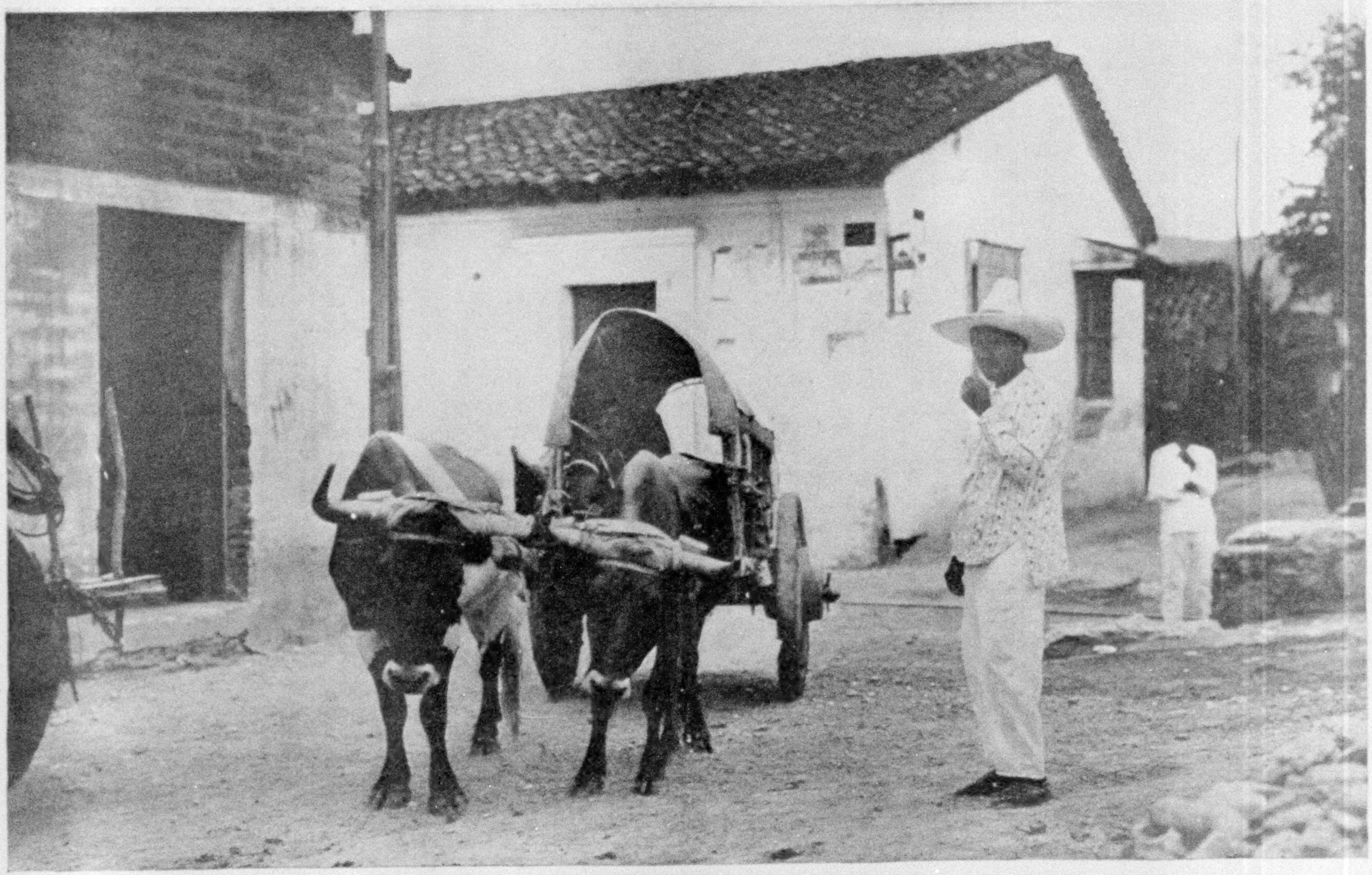


Photo from A. W. Cutler

TRAVELING IN STATE: A SCENE IN THE QUAINT OLD INDIAN TOWN OF TEHUANTEPEC, MEXICO

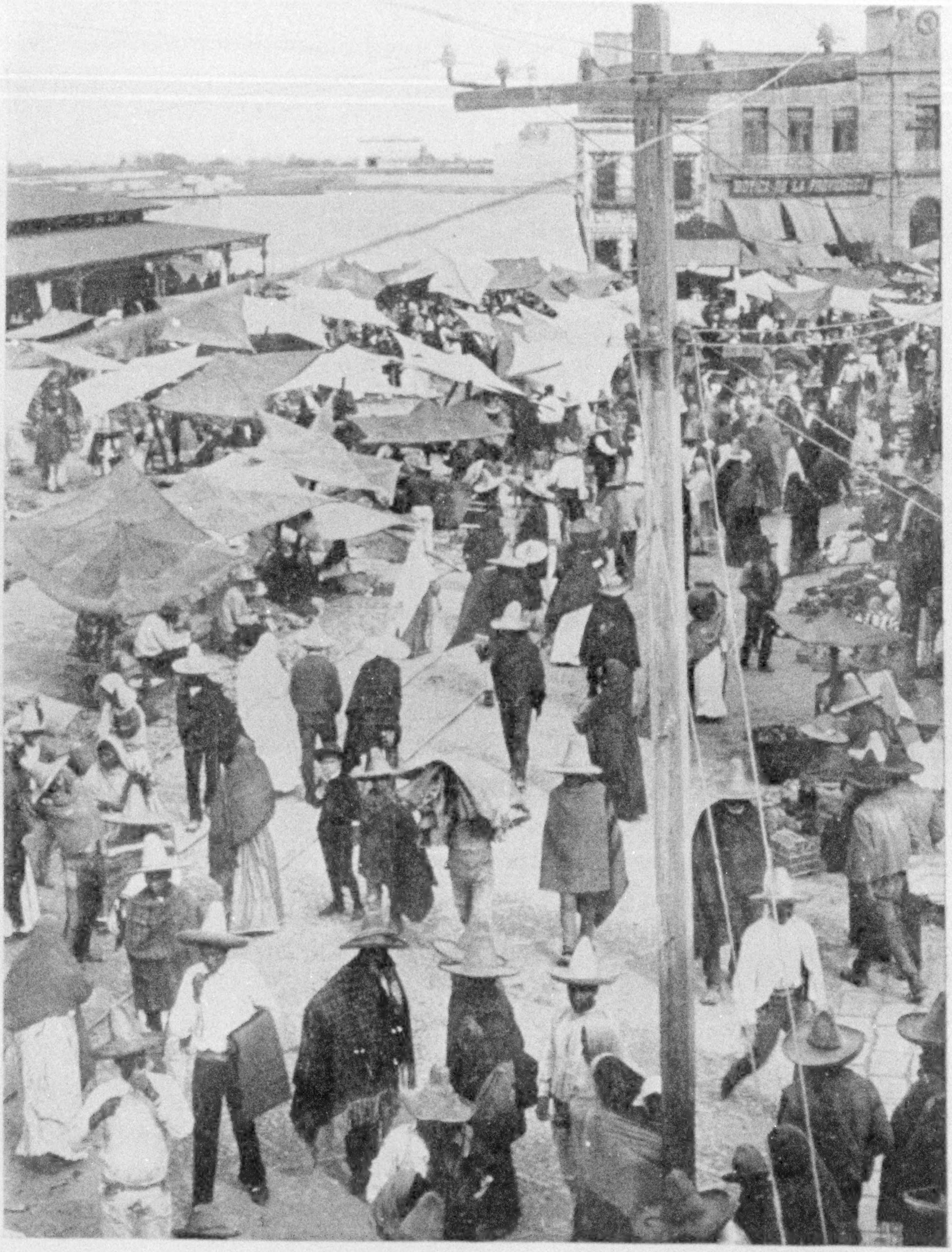
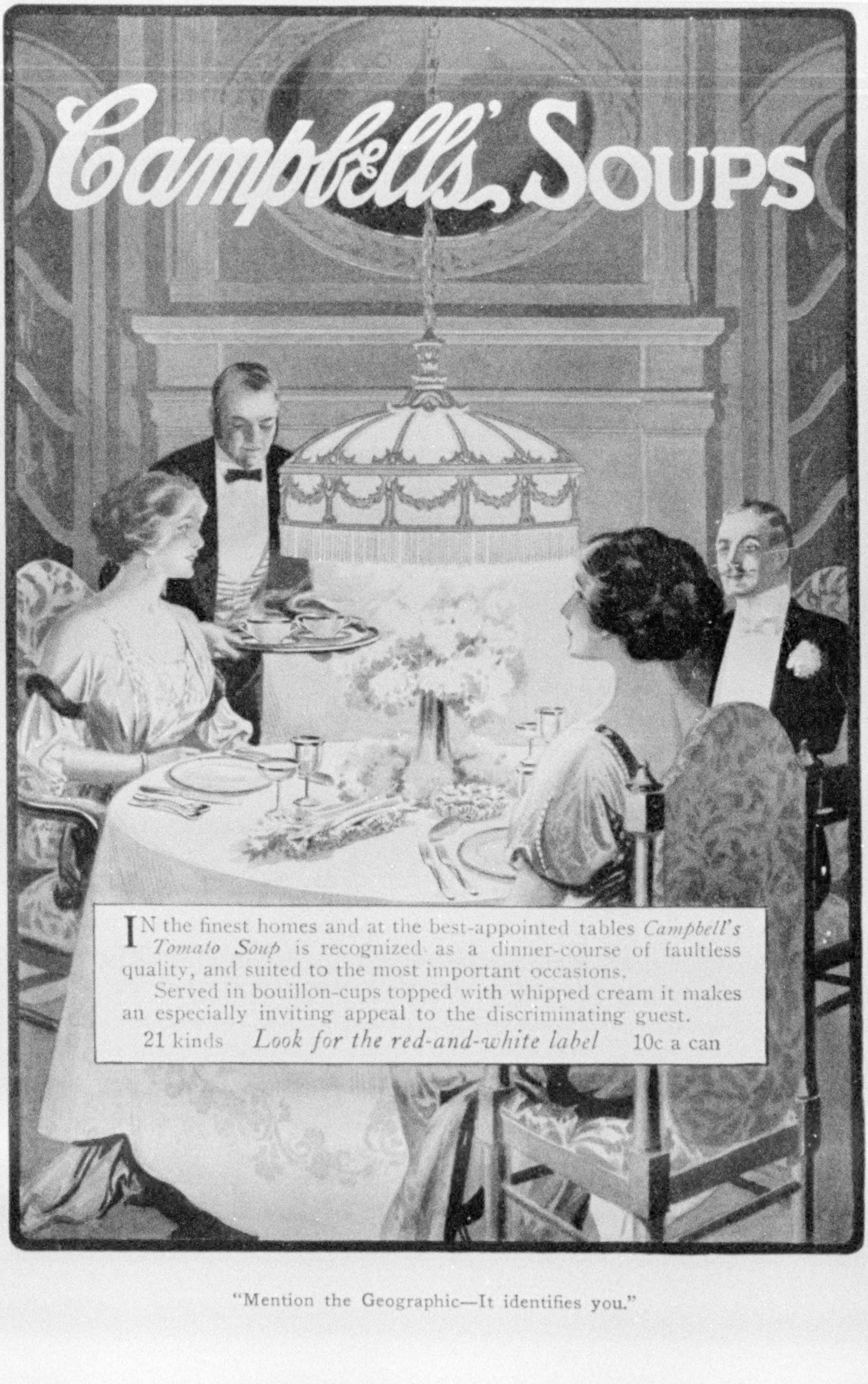


Photo and copyright by Underwood & Underwood

A BUSY MART: A SCENE IN THE MARKET SQUARE IN MEXICO CITY ON AN ORDINARY MORNING

Most of the foodstuffs, such as vegetables, butter, fruit, and poultry, were brought to this market by farmers to supply the city. Note the high-crowned straw hats and the blankets used as overcoats.

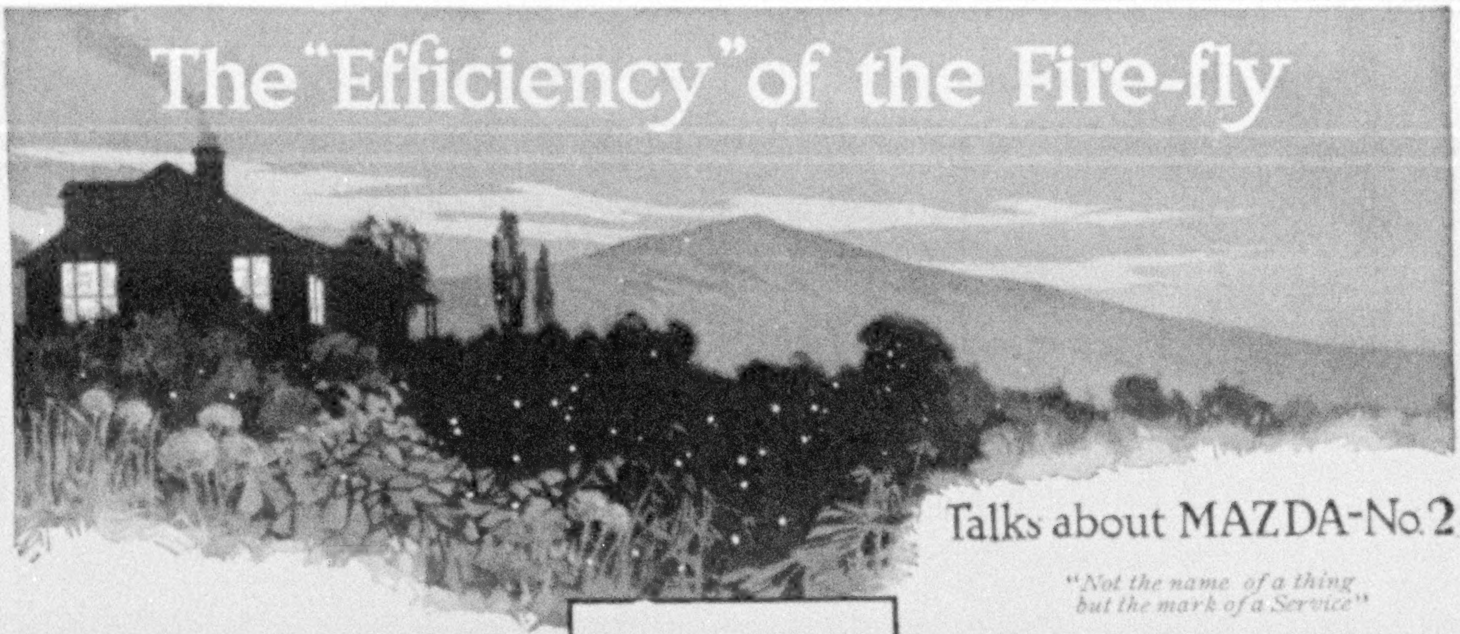


IN the finest homes and at the best-appointed tables *Campbell's Tomato Soup* is recognized as a dinner-course of faultless quality, and suited to the most important occasions.

Served in bouillon-cups topped with whipped cream it makes an especially inviting appeal to the discriminating guest.

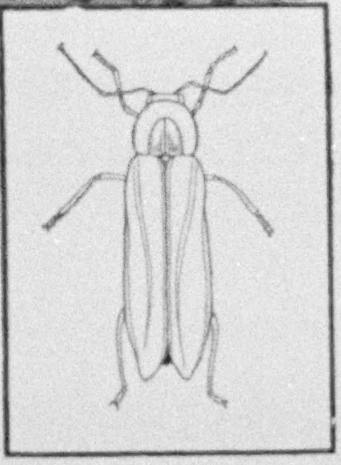
21 kinds *Look for the red-and-white label* 10c a can

The "Efficiency" of the Fire-fly



Talks about MAZDA-No. 2

"Not the name of a thing but the mark of a Service"



The light produced by the fire-fly has challenged the lamp experts of two continents.

PRIMITIVE man once used lanterns holding swarms of fireflies to guide him when he went forth at night.

Today, as Waldemar Kaempffert points out in an article on "The Light of Our Descendants" printed by the *Outlook*, the illuminating specialists of two continents are studying the firefly for a solution of one of mankind's greatest problems—artificial light.

To imitate the firefly—to get a great deal of light with but little heat waste—has been the steadfast aim of technical experts in electric lighting since the study of electric light became a science.

Step by step science has advanced in its search for this *economy in the fuel of light.*

That is what the much-used word "efficiency" means to electric lighting science—*more light without increasing cost.*

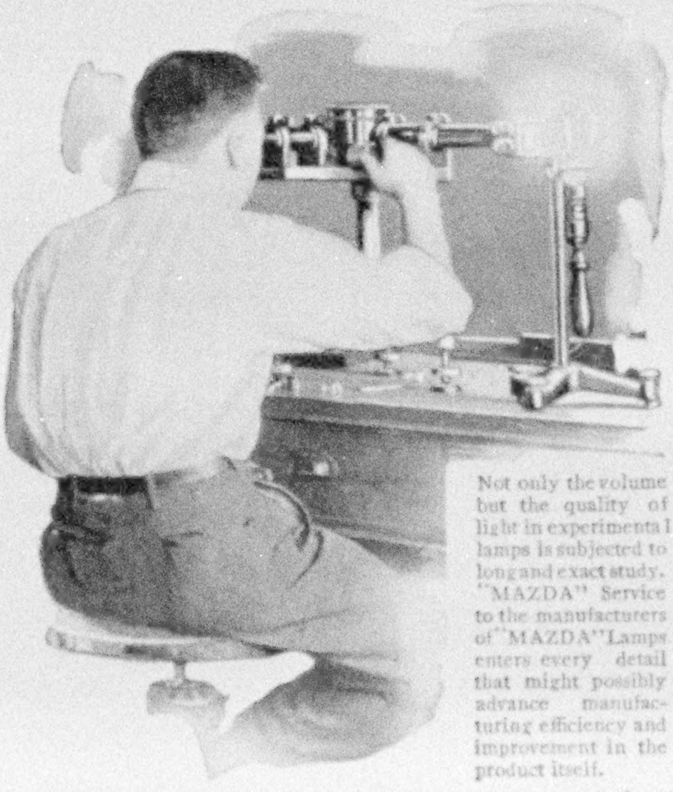
The farthest advance in this study of lighting economy has been reached in the work of the famous group of scientists in the Research Laboratories of the General Electric Company at Schenectady. These experts selected and approved the features of a lamp that gives a beautiful light—*three times as much light* with the same amount of current as you get from the old-style carbon lamp.

On the bulb of this lamp is etched the mark "MAZDA."

"MAZDA" is the mark of a Service. It tells you of the great work that these busy men have done for the manufacturers of "MAZDA" lamps. It tells you what they are doing while you are reading this article. It tells you also of what they will be doing to-morrow, and next month, and next year because it is the trade-mark designation of the incessant effort "MAZDA" Service is making toward the ideal light.

On the lamps themselves the mark "MAZDA" means the selection of every "efficiency" discovery these Research Laboratories may find applicable and practical. Not content with wide investigation and experiment in these Research Laboratories, and in the active developing and manufacturing centers at Harrison and Cleveland, there is close touch also with progress that may be made by great experimental laboratories of Europe. From whatever source the new knowledge, comes it is impartially considered with reference to its possible value in enabling the manufacturers to produce for you a lamp more "efficient" or adaptable. The proved advances, year after year, are transmitted by this "MAZDA" Service to the General Electric Company factories and the factories of other Companies entitled to receive this Service.

The result is that when you buy a "MAZDA" lamp, today or at any future time, "MAZDA" Service will shine in that lamp. You will know when you see that word "MAZDA" that you have the utmost result of all this indefatigable labor—the summed up successes of these keenest lamp experts in the world. For the lamp so marked will always mean that this Service has been applied, and the manufactured product backed by this Service will always be marked "MAZDA."



Not only the volume but the quality of light in experimental lamps is subjected to long and exact study. "MAZDA" Service to the manufacturers of "MAZDA" Lamps enters every detail that might possibly advance manufacturing efficiency and improvement in the product itself.

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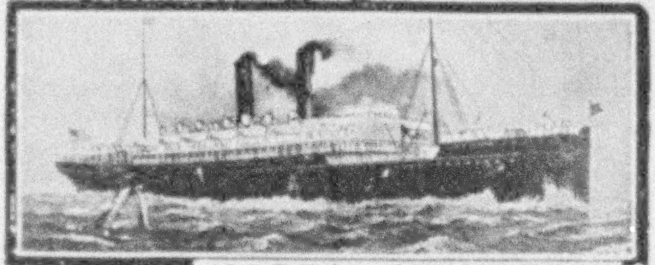
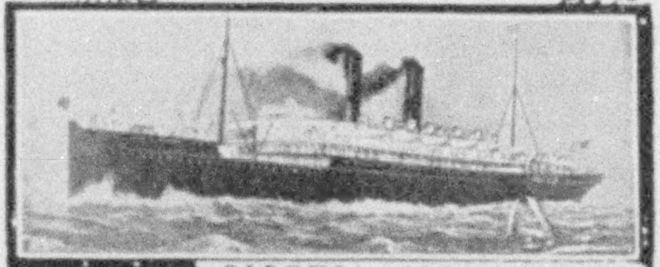


KOREA 18000 TONS

THE



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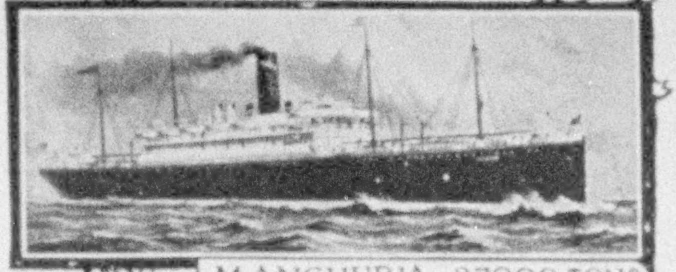

MANCHURIA 27000 TONS

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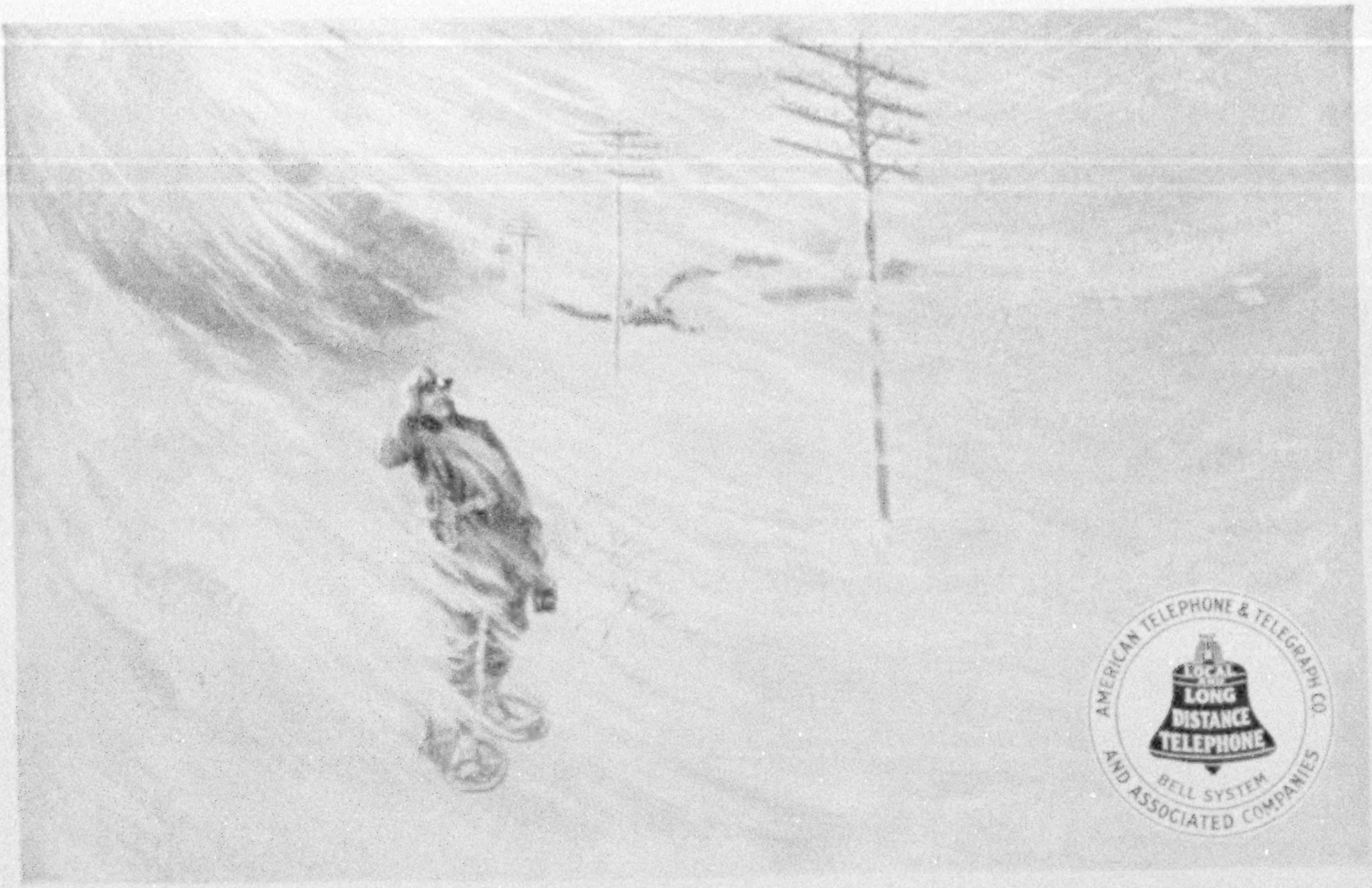


The Spirit of Service

WHEN the land is storm-swept, when trains are stalled and roads are blocked, the telephone trouble-hunter with snow shoes and climbers makes his lonely fight to keep the wire highways open.

These men can be trusted to face hardship and danger, because they realize that snow-bound farms, homes and cities must be kept in touch with the world.

This same spirit of service animates the whole Bell telephone system. The linemen show it when they carry the wires across mountains and wilderness. It is found in the girl at the switchboard who sticks to her post despite fire or flood. It inspires the leaders of the telephone forces, who are finally responsible to the public for good service.

This spirit of service is found in the recent rearrangement of the telephone business to conform with present public policy, without recourse to courts.

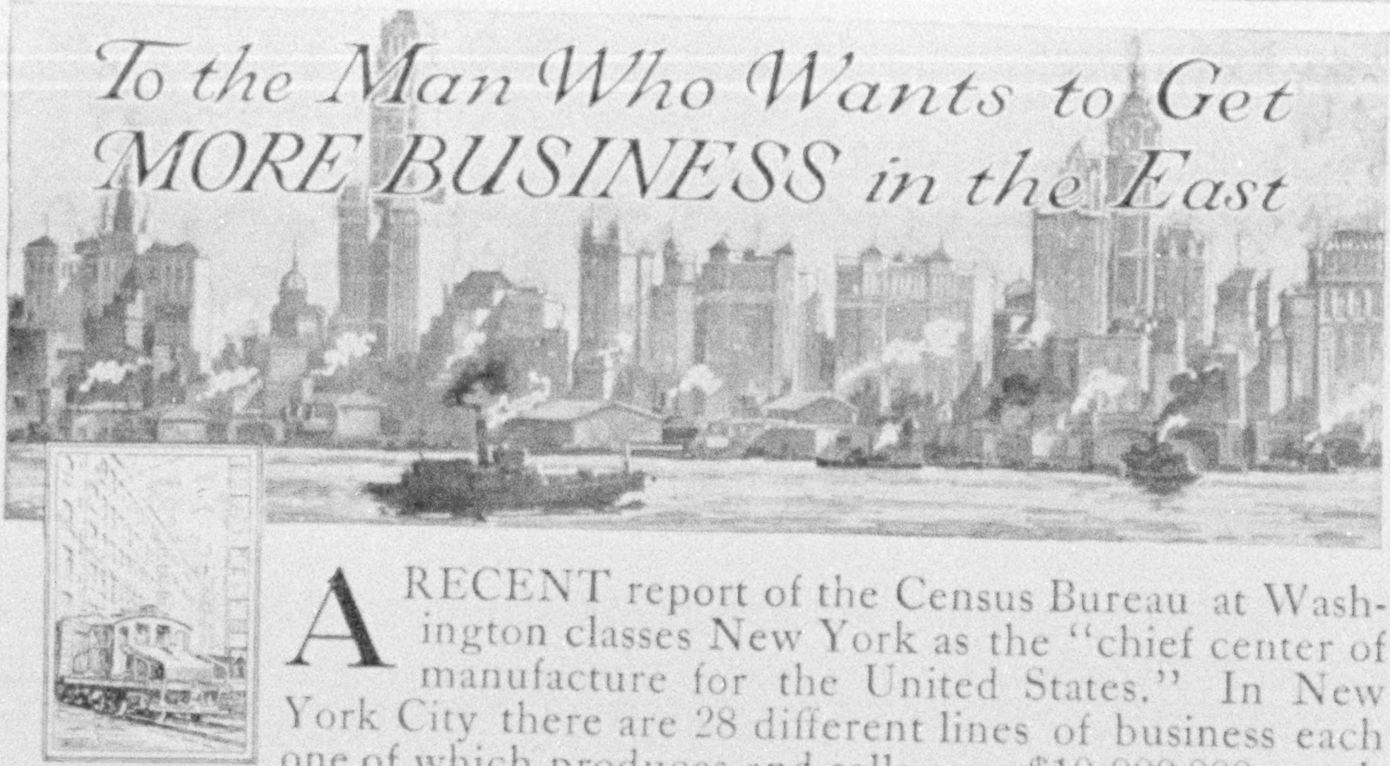
The Bell System has grown to be one of the largest corporations in the country, in response to the telephone needs of the public, and must keep up with increasing demands.

However large it may become, this corporation will always be responsive to the needs of the people, because it is animated by the spirit of service. It has shown that men and women, co-operating for a great purpose, may be as good citizens collectively as individually.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

To the Man Who Wants to Get MORE BUSINESS in the East



A RECENT report of the Census Bureau at Washington classes New York as the "chief center of manufacture for the United States." In New York City there are 28 different lines of business each one of which produces and sells over $10,000,000 worth of goods per year. In one industry alone New York supplies half the total output of the United States.

As a financial center New York is more than six times greater than any other city in the country. Twenty-six per cent of the banking power of the United States is centered in New York—and 10 per cent of the banking power of the world.

These are stupendous facts and figures. They emphasize the vast and far reaching importance of New York as a focusing point for business—as a base from which YOU should operate if you want to develop import or export trade, or if you want more business in the East, with lower selling expense, reduced transportation costs, and quicker deliveries.

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BECAUSE you would then command the most efficient and complete manufacturing and shipping facilities in the United States.

BECAUSE 27% of the buying population of the United States would be located within 100 miles of your door—a market of tremendous possibilities.

BECAUSE New York is the gateway through which one-half of the import and export business of the United States passes.

BECAUSE in New York you would have a labor supply not to be found in any other American city.

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Here you will have room to expand as your business grows. You will find abundant daylight, ample power, inexhaustible water supply—to be paid for as used. You will have fire protection that pulls insurance down to 10 to 20 cents per hundred—a rate without precedent. You will have thoroughly up-to-date sanitary conditions for workmen—and an abundant supply of labor, housed near at hand.

All railroad and steamship lines connect directly with Bush Terminal. Goods are delivered to your floor and shipments are taken from your elevator absolutely WITHOUT CARTAGE EXPENSE.

To locate in New York is no longer expensive or difficult. It is EASY and ECONOMICAL—reduced to the lowest terms of simplicity—by the Bush Terminal plan.

Yet you want us—and we want you—only if it is to YOUR advantage. We will make a careful investigation and tell you frankly whether New York as an operating base would SAVE MONEY for you; whether it would reduce transportation costs, thus netting BIGGER PROFITS on present business; whether it would simplify buying and selling operations, thus enabling you to build MORE BUSINESS—Eastern, Export or Import; whether it would bring you closer to raw material sources and CUT MANUFACTURING COSTS.

This service costs nothing, and entails no obligation.

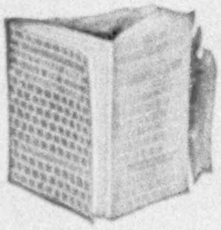
"How to Reduce Overhead Expense"

is the title of a valuable book we will send free to any business man who requests a copy on his firm letterhead.

Bush Terminal Company, 100n Broad St., New York

A view of Bush Terminal

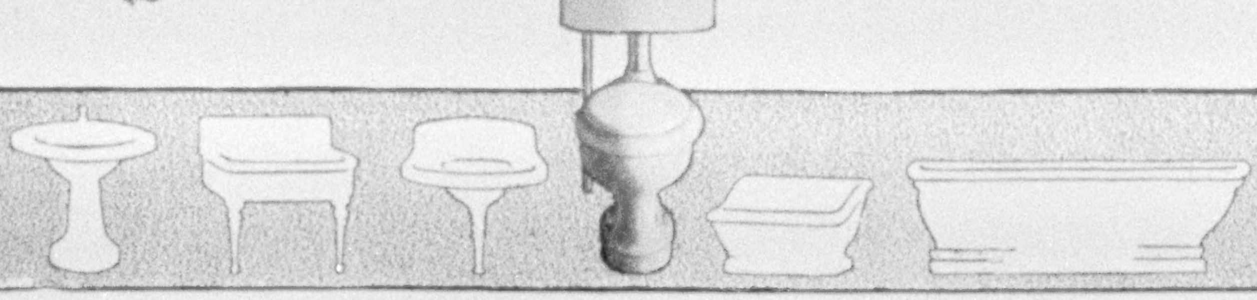
THE hostess is freed from untold embarrassment and the mental comfort of the guest has had thoughtful consideration in the home where the noiseless SI-WEL-CLO Closet has been properly installed. The flushing of it cannot be heard outside of its immediate environment. Its sanitary features are perfect. ¶ Si-wel-clo Closets are made of Trenton Potteries Company Vitreous China, beautiful in appearance, pure white all through, impervious to acids and grease, and as easy to clean as a china plate. ¶ If you are planning to build or remodel, ask your architect or plumber about Trenton Potteries Company products. ¶ Send now for our booklet, "Bathrooms of Character." You will value its suggestions on bathroom planning.

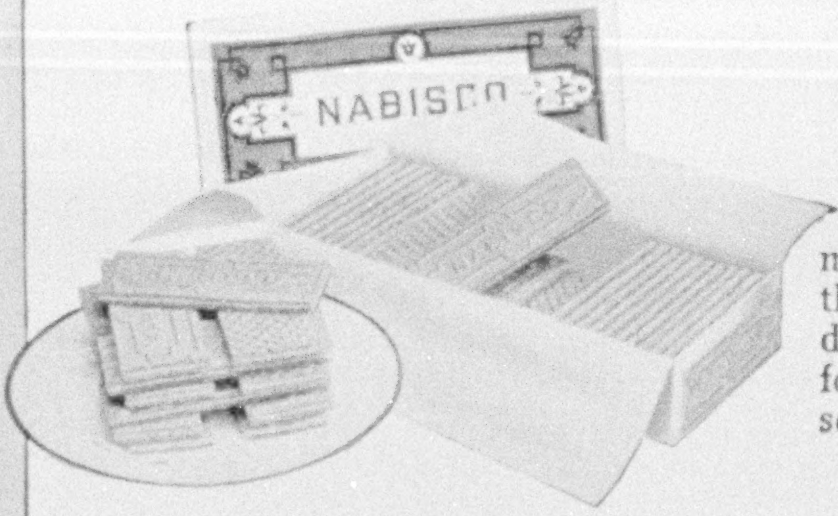


"Bathrooms of Character"
S-27
sent on request

THE TRENTON
POTTERIES COMPANY
Trenton, N. J., U.S.A.

Largest Manufacturers of Sanitary Pottery in the U.S.A.





NABISCO
Sugar Wafers

make an irresistible appeal to the palate. These bewitching dessert confections are made for the joyful occasion, the social gathering, the feast.

ADORA
A FILLED SUGAR WAFER CONFECTION

ADORA—Another dessert confection invariably popular with the hostess. These little wafers are pleasing to look upon, entrancing to the taste, whether served with desserts or eaten as a confection.

FESTINO—Their resemblance to an actual almond is most attractive. FESTINO conceals beneath the most delicate of shells an enticing sweetened, almond-flavored filling.

Chocolate Tokens

CHOCOLATE TOKENS—A dessert confection. An unusually pleasing chocolate-covered sweet with a filling of creamy goodness.

NATIONAL BISCUIT COMPANY

Do You Love Your Wife?

Can You Prove It?

AIMS EASY
AS POINTING
YOUR FINGER
10 Shots Quick

LIFE Insurance? That's money, but is money everything? You, of course, protect her future, but what is that compared to her present safety—her life—her home? Are they protected now?

Is she at the mercy of the first burglar—thug—fiend that knocks at your door or forces your window?

Do you care enough for the woman who has entrusted herself to you to safeguard her with the lightning quick Ten Shot Savage Automatic—the strongest insurance policy that money can buy or love can provide?

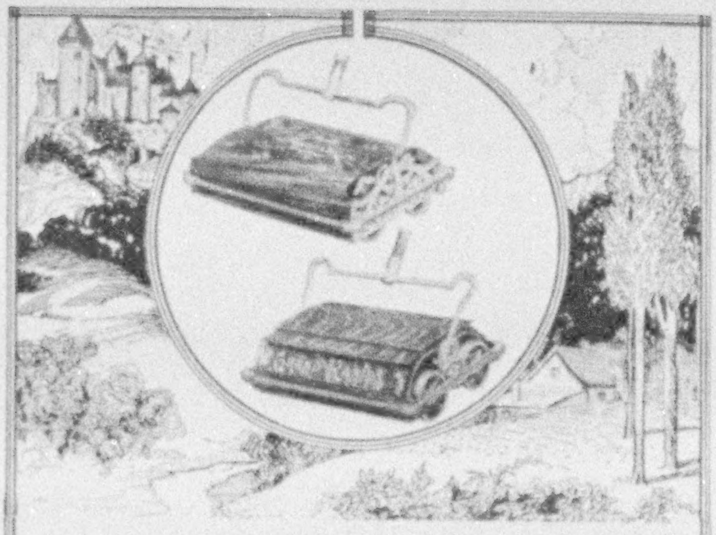
The Savage Automatic shoots ten paralyzing shots, one to a trigger pull, as fast or as slowly as you please.

The Savage's two extra shots mean 25% *more protection*. The Savage is the one automatic which is guarded against the old excuse, "Didn't know it was loaded." A glance or touch tells positively.

VALUABLE BOOKLET

Send 6c in stamps for booklet, "If You Hear a Burglar," advice by famous detectives and police authorities. Savage Arms Company, 383 Savage Avenue, Utica, New York.

THE NEW SAVAGE AUTOMATIC



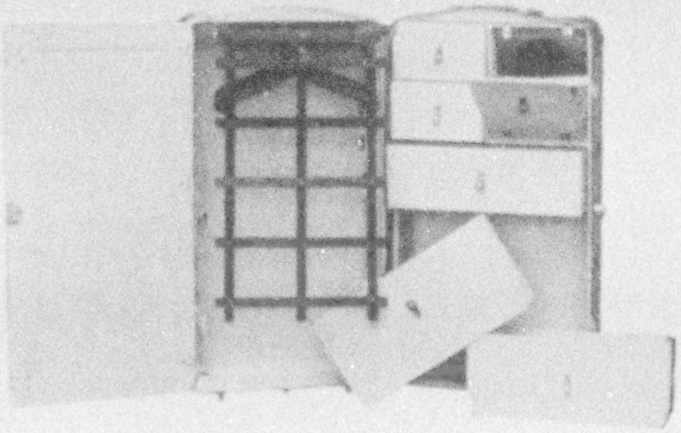
The Handy Inexpensive Cleaning Device for Every Day Use

IN cottage or palace, no matter what other methods are employed for sweeping carpets or rugs, there still remains the every day necessity for a good, hand propelled carpet sweeper that promptly and efficiently gathers up all dirt and litter without noise, dust or effort.

BISSELL'S Carpet Sweeper
"Cyco" BALL BEARING

is clearly the accepted sweeping appliance practicable for daily use and furnishes the fullest measure of solid comfort and convenience. An extra sweeper for upstairs doubles its helpfulness. There is a pattern for every home. Prices range from $2.75 to $5.75, depending upon style and locality. Sold by the best stores everywhere.

BISSELL CARPET SWEEPER CO.
Grand Rapids, Mich.
"WE SWEEP THE WORLD"



OUR success as trunk builders depends on our giving you more and better trunk service for less money than you would receive elsewhere.
If we can build an Indestructo Trunk that will travel further, wear longer, and give better satisfaction than you are accustomed to, then we are justified in our purpose of serving you.

Unless we had really served the 100,000 people who have already bough our trunks, we would not be here today.

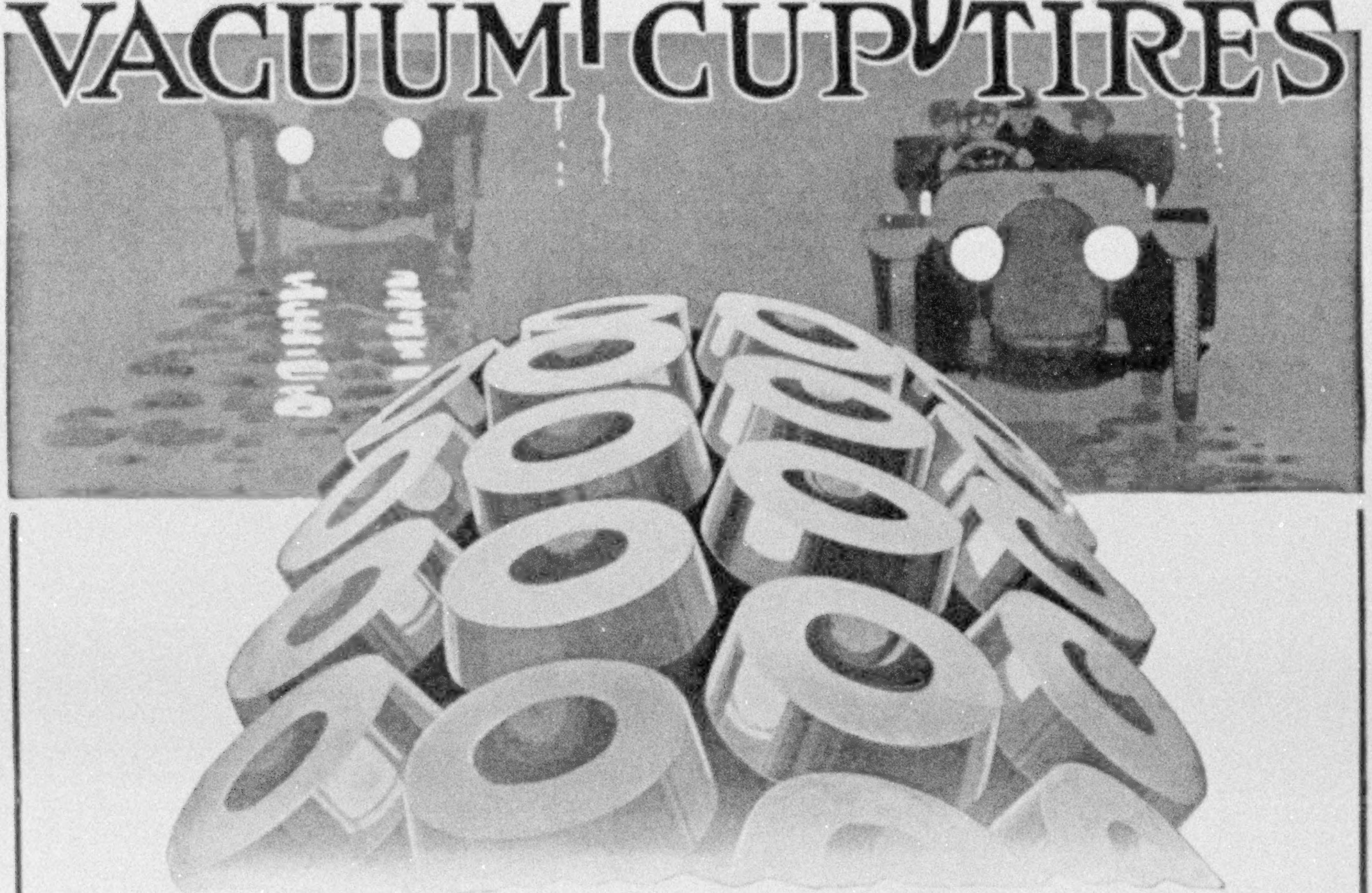
Because we have never sold an Indestructo Trunk that was not guaranteed against any kind of accident for 5 years regardless, of what happened or of how far its owner traveled.

That's the way Indestructo Trunks are sold today; If yuor trunk does not remain in good traveling condition for 5 years, send it back and we'll send you a new one free.

Our booklet explains that fully—ask for it.

National Veneer Products Co.
8 Beiger Street Mishawaka, Indiana.

PENNSYLVANIA
Oilproof
VACUUM CUP TIRES



Question:

Do They Actually Prevent Skidding?

Answer:

For three years now we have sold these tires on our widely advertised guarantee that they will not skid on wet or greasy pavements, else returnable at full purchase price—

Never a challenge of this guarantee from a user.

There's no limit to their skid-resistance—the heavier the slewing force, the stronger grows the multiple suction hold of the heavy-walled Vacuum Cups. The rolling tire lifts and releases the cups edgewise without drag on the forward speed.

And what tires can match their service? Guaranteed for 4,500 actual miles—with many records of 12,000 to 15,000 on heavy cars and great excess mileage always the rule. ***Absolutely oilproof.***

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Cleveland, 1921 Euclid Avenue
Detroit, 254 Jefferson Avenue
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Kansas City, Mo., 514 E. 15th Street
Omaha, 215 S. 20th Street
Seattle, Armour Building
St. Paul, 149 W. 6th Street

PENNSYLVANIA RUBBER COMPANY OF NEW YORK
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Boston, 735 Boylston Street
Atlanta, 25 Houston Street
Dallas, 2111 Commerce Street

PENNSYLVANIA RUBBER COMPANY OF CALIFORNIA
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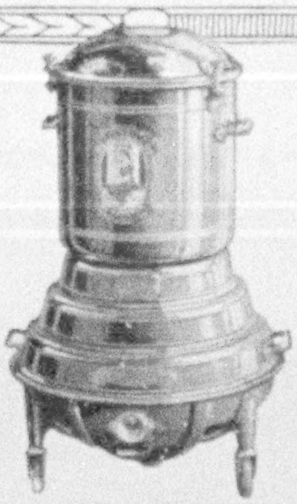
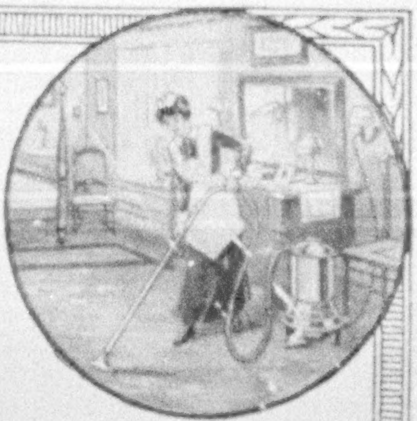
An Independent Company with an independent selling policy





WHY THE

Vacuna

Portable Cleaner

IS SUPERIOR

TO THE INSTALLED PLANT

It cleans more thoroughly and quickly than is possible with a central plant installation. It is easier and more convenient to use. It reaches out-of-the-way places without difficulty. It costs far less to install and far less to operate. It does not require attention, save lubrication two or three times a year. It has longer life—no Vacuna has ever yet worn out. It is fool-proof and cannot get out of order; it never needs repairs. It picks up anything small enough to go through the mouth of the cleaning tool—rags, paper, matches, pins, etc., are *devoured* by the Vacuna. It cannot harm the most delicate fabric.

The Vacuna can be installed in any capacity desired, in any building, new or old. There are no pipes to clog and put the plant out of commission. There is no tearing out of walls and pipes to locate trouble. There is no unwieldy hose to be dragged long distances through rooms and halls, marring furniture and woodwork. The Vacuna is always where you want it and ready when you want it to perform its work instantly and efficiently.

The best proof you can have of the above statements is to let us refer you to scores of private dwellings, apartment houses, office buildings, hotels, etc., in which central plants have been installed at great expense, but in which Vacunas are being used instead.

VACUNA SALES COMPANY

Dep't G, 251 Fifth Avenue **New York, N. Y.**

Valuable Book

Sent Free

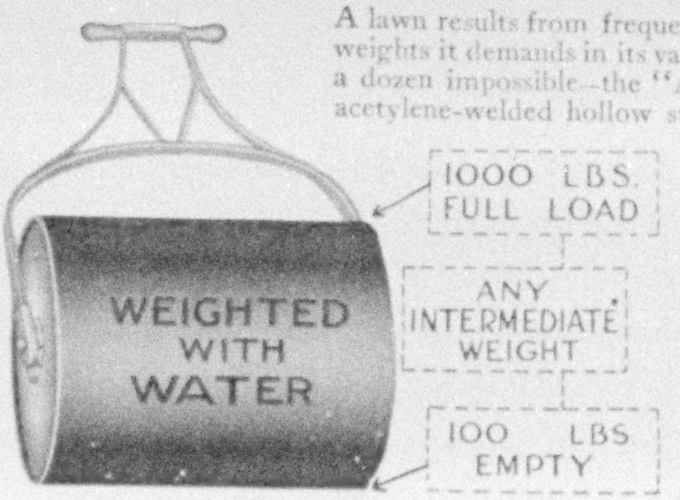
giving vital facts on vacuum cleaning. Write for a copy.

Let us put you in touch with our nearest agent, to demonstrate the Vacuna in your own home without expense or obligation.

Vacuna offers a wonderful opportunity for the RIGHT dealer.

"ANY-WEIGHT"-WATER-BALLAST-ROLLERS | MAKE BEAUTIFUL LAWNS

A lawn results from frequently rolling a patch of grass with machines of the many weights it demands in its various moods. One fixed weight roller is incompetent—a dozen impossible—the "ANYWEIGHT" a positive necessity. This, with its acetylene-welded hollow steel shell, weighs 100 pounds without ballast—just right for wet Spring lawn.



Increase the weight by filling hollow shell with water, drop by drop if you wish, to the half-ton pressure demanded by dry Summer lawn, drives, or tennis court. It's filled or emptied in a jiffy—the machine fits the job; the price any pocketbook.

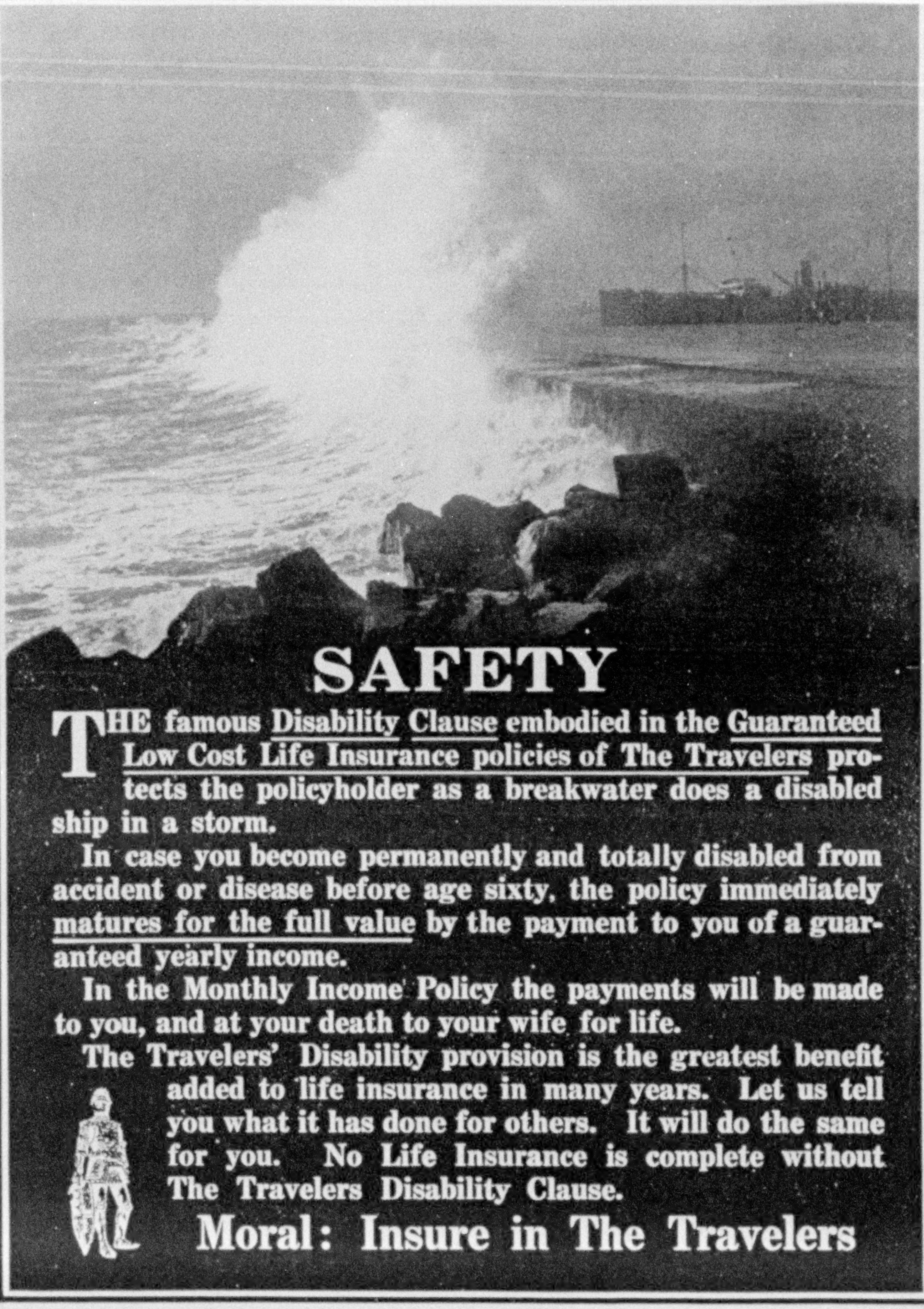
One or two sections of hardened and rust-proofed steel—roller bearings—steel handles—adjustable counterpoise weights if ordered. Fills and empties at either end of drum near its end, without upending.

Write for Catalogue—it's free

WILDER-STRONG IMPLEMENT CO.

Monroe, Mich. **Box 71**

Valuable treatise on Care of Lawns for 10c. in stamps



SAFETY

THE famous Disability Clause embodied in the Guaranteed Low Cost Life Insurance policies of The Travelers protects the policyholder as a breakwater does a disabled ship in a storm.

In case you become permanently and totally disabled from accident or disease before age sixty, the policy immediately matures for the full value by the payment to you of a guaranteed yearly income.

In the Monthly Income Policy the payments will be made to you, and at your death to your wife for life.

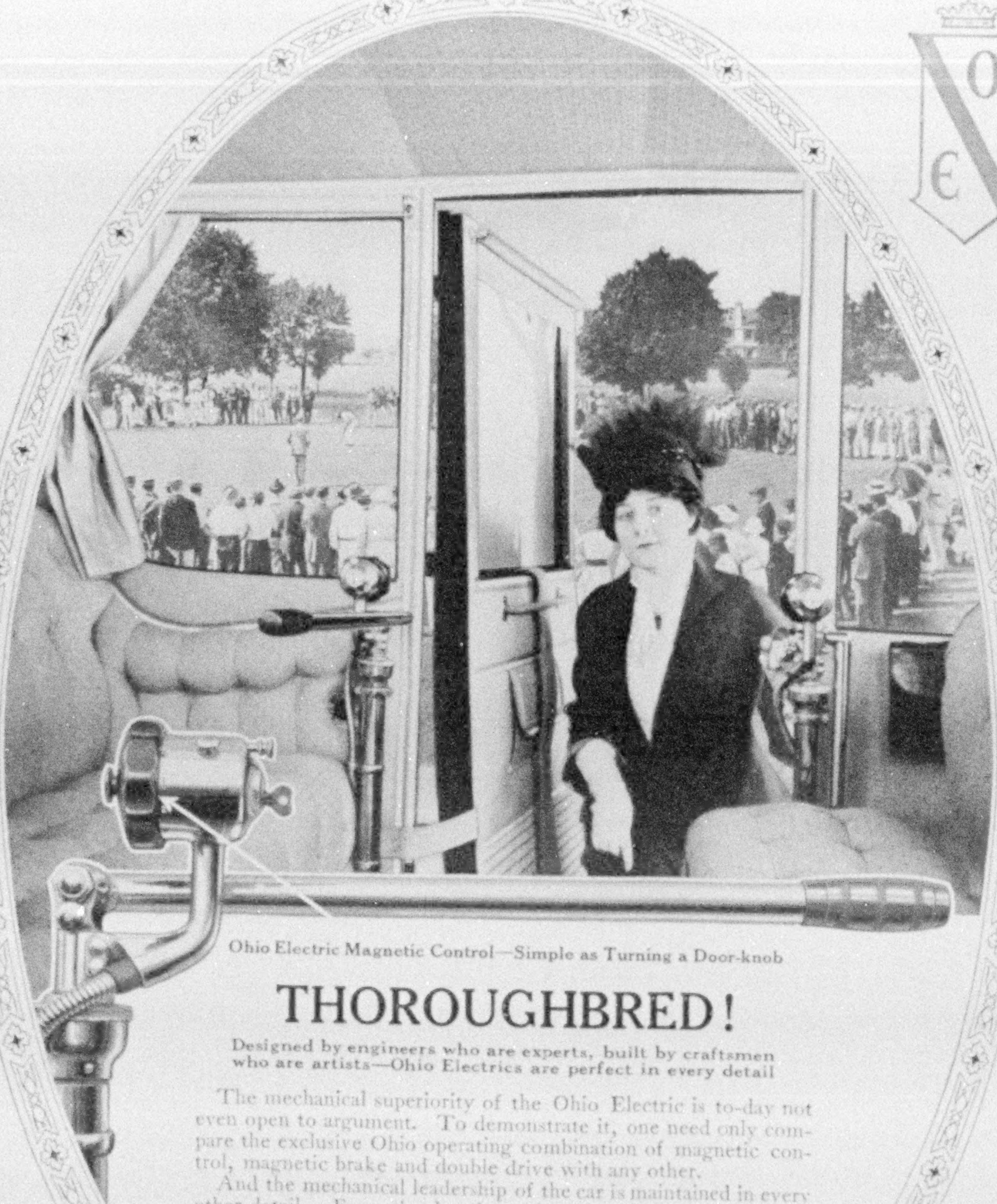
The Travelers' Disability provision is the greatest benefit added to life insurance in many years. Let us tell you what it has done for others. It will do the same for you. No Life Insurance is complete without The Travelers Disability Clause.

Moral: Insure in The Travelers

The TRAVELERS INSURANCE CO., Hartford, Conn. Nat. Gen. E Tear off

Please send me particulars regarding your Guaranteed Low Cost Life Insurance Policy with Disability Clause

My name, address, occupation, and date of birth are written below :



Ohio Electric Magnetic Control—Simple as Turning a Door-knob

THOROUGHBRED!

Designed by engineers who are experts, built by craftsmen who are artists—Ohio Electrics are perfect in every detail

The mechanical superiority of the Ohio Electric is to-day not even open to argument. To demonstrate it, one need only compare the exclusive Ohio operating combination of magnetic control, magnetic brake and double drive with any other.

And the mechanical leadership of the car is maintained in every other detail. From the day the various parts leave forge or mill they are under the supervision of men with whom labor is an art and pride of workmanship paramount. *Literature on request.*

The Ohio Electric Car Co., 1527 W. Bancroft St., Toledo

Gibson Electrics, Ltd. Ontario Distributors Toronto, Canada

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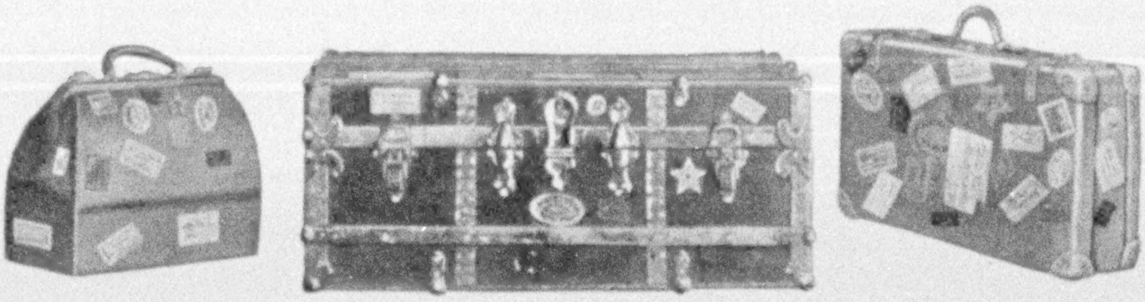
THE ENVIED
ELECTRIC



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Whether a brief vacation or an extended tour, you should travel with carefree mind. Our Baggage Policy enables you to dismiss any anxiety about your personal belongings and thoroughly enjoy every minute of your trip.

Costs But a Few Cents a Day.

Saves you—maybe hundreds of dollars. Indemnifies you against loss of baggage or personal effects from fire, theft, navigation, and transportation while in the custody of any railroad, express company, steamship, hotel, or clubhouse. Write us for full information before taking your next trip.

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Capital $4,000,000. Surplus to policy-holders, over $8,500,000

We are the oldest joint-stock Insurance Company in America and guarantee prompt settlement. We also write insurance covering:

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Start any time, any place; the price is the same. Tickets good for two years. First class throughout.

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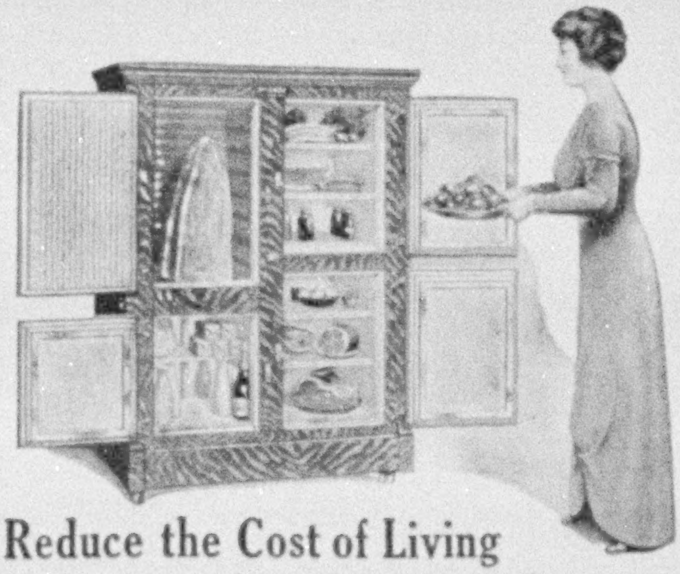

Reduce the Cost of Living

by equipping your home with a scientifically constructed sanitary refrigerator, which prevents waste of food through spoilage, tainting and souring.

McCray Sanitary Refrigerator

has a perfect circulation of pure, cold, dry air that keeps foods fresh, healthful, and free from taint. Its scientific insulation economizes ice. Sanitary, easily cleaned linings of opal glass—porcelain, white enamel or odorless white wood. A great variety of stock sizes ready for immediate shipment. Also built to order for any purpose.

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No. 69 For Grocers
No. 73 For Florists
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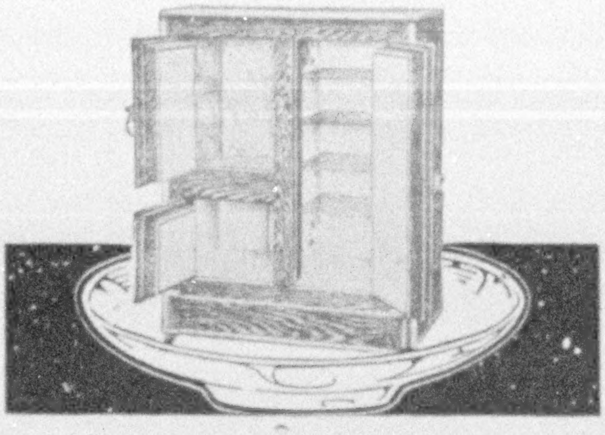
McCray Refrigerator Co., 676 Lake St., Kendallville, Ind.

CHICAGO—158 N. Wabash Ave. NEW YORK—McCray Bldg., 7-9 W. 30th St.

For Branch Salesrooms in Your City See Your Telephone Directory

Like a clean china dish



Superb Porcelain Lined—the delight of every woman's heart—the pride of every housekeeper. Here's that famous Refrigerator with the seamless, scratchless, dish-like lining, the genuine

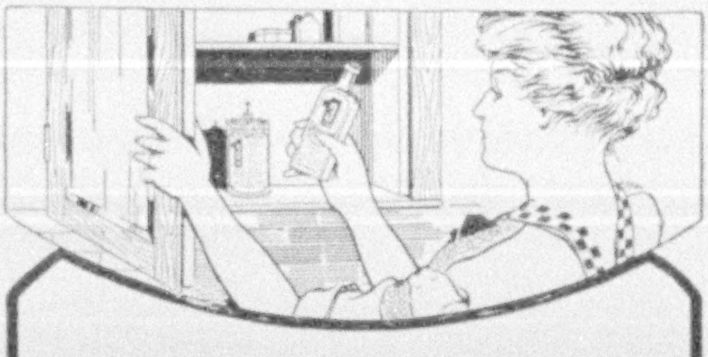
Leonard Cleanable

Don't confuse this wonderful sanitary lining with paint or enamel. I will mail you—free—a sample of Leonard Porcelain that will quickly show you the difference. You **can't scratch it even with a knife.** It's everlasting—easily kept beautifully sweet and clean. You'll never be satisfied with anything else. Can be arranged for outside icing and water cooler. Style shown is No. 4, in polished oak case. Size, 35 x 21 x 45 - - - - $35.00

50 Styles—$15 up—Freight Paid

To Ohio and Mississippi Rivers. I take the risk. Send for catalog today. Money returned if you are not perfectly satisfied. Ask for sample of porcelain and I'll mail my booklet, "Care of Refrigerators." Every woman should have a copy of this valuable book.

C. H. LEONARD, President, Grand Rapids Refrigerator Co.
209 Clyde Park Ave., Grand Rapids, Mich. (1)



Keep this helpful servant where you can put your hand right on it.

There are many ways in which 3-in-One lessens labor. A little on a cheese cloth (after it has thoroughly permeated the cloth) makes a perfect "dustless duster." A few drops on a cloth wrung out in cold water is an ideal cleaner and polisher for furniture. As a lubricant, nothing excels 3-in-One because it goes at once to the friction spot, and wears long without gumming; never dries out.

3-in-One Oil

prevents rust and tarnish. Bath-room fixtures, stoves and ranges, metal fixtures indoors and out, are kept bright and usable by 3-in-One.

3-in-One is sold in drug stores, general stores, hardware, grocery, and housefurnishing stores: 1 oz. size, 10c.; 3 oz., 25c; 8 oz. (½ pt.), 50c. Also in Handy Oil Cans, 3½ oz., 25c. If your dealer hasn't these cans we will send one by parcel post, full of good 3-in-One, for 30c. **A Library Slip with Every Bottle.**

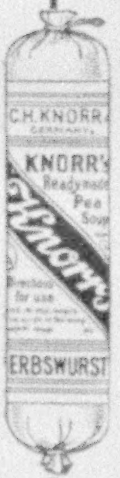
FREE—Write for a generous free sample and the 3-in-One Dictionary.

THREE-IN-ONE OIL CO.
42 UW. Broadway, New York

Knorr

Condensed Soup

ECONOMY of SPACE and EXPENSE



PEA SOUP
BEAN SOUP
LENTIL SOUP

In 1/4 lb., 1/2 lb., and 1 lb. rolls

Knorr's Compressed Evaporated Vegetables

An absolute necessity for long voyages

TEN VARIETIES

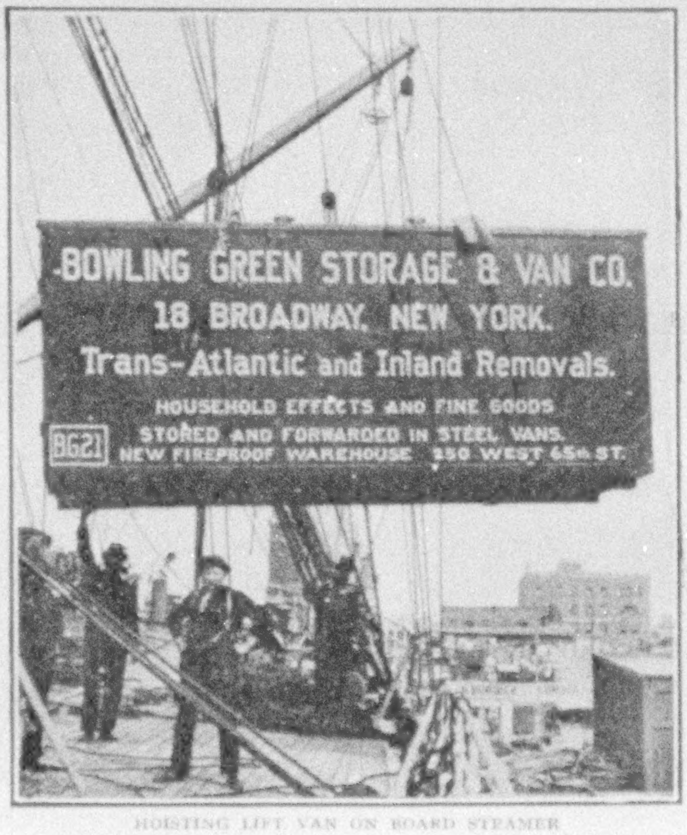
Packages of about 5 ounces each

20 packages in each hermetically sealed can

Knorr's Evaporated Sliced Potatoes

In tins of about 16 lbs. each hermetically sealed

MEYER & LANGE, New York, *Sole Agents*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"For the Benefit and Enjoyment of the People"

Old Faithful Geyser—the most renowned of all geysers in the Park—plays for all; the Grand Canyon of the Yellowstone, the Snow-dappled Peaks, the Mirror Lakes, the Dashing Streams and a thousand other wonders are open to everybody. Tourists stop at Magnificent Hotels at the end of each day's journey.

Send eight cents for three illustrated booklets descriptive of this Wonderland.

Season
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Northern Pacific Railway

A. M. CLELAND,
General Passenger Agent,
ST. PAUL, MINN.

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The "Baby Grand"

Let the "Homefolks" Play Billiards!

Surprise and delight the entire household by installing the "Baby Grand"—a billiard table that will both *ornament* and *magnetize* your home.

No gift compares with the "Baby Grand" as a source of entertainment.

The Superb BRUNSWICK
"BABY GRAND"
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Complete, High-Grade Playing Outfit Free

Any size or style of table can be purchased on easy terms. We spread the payments over an entire year. The price of each table includes complete high-grade Playing Outfit—Cues, Balls, Bridge, Rack, Chalk, Assorted Tips, Lightning Cue Clamps, Markers, Cover, Billiard Brush, Rules, Book on "How to Play," etc.

Fun for a Lifetime, Without Expense!

When you buy a Brunswick table you endow your home with an inexhaustible fund of *expenseless* entertainment. It's a real *economy* to own one of these splendid tables.

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Please send me the free color-illustrated book—
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2½ days on the beautiful, historic St. Lawrence, 3½ days at sea, to Bristol, Eng. (2 hours to London). Speedy, restful voyage to Europe. Our palatial speedy steamships "Royal Edward" and "Royal George" are equipped with every convenience for your comfort—

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—suites and rooms with private baths, elevators, wireless, six passenger decks, spacious promenades, etc.

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LISTERINE is an agreeable antiseptic mouthwash that keeps the teeth and gums sweet and healthful and neutralizes breath odors. Listerine is as necessary for the complete toilet of the mouth as the toothwash.

All Druggists Sell Listerine.

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GOLD EDGES
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GOLD EDGES

50¢ PER PACK

For Social Play

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THE OFFICIAL RULES OF CARD GAMES
Hoyle up-to-date
SEND 15¢ IN STAMPS
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The Dodson Purple Martin House: 26 rooms and attic, $12; with all copper roof, $15
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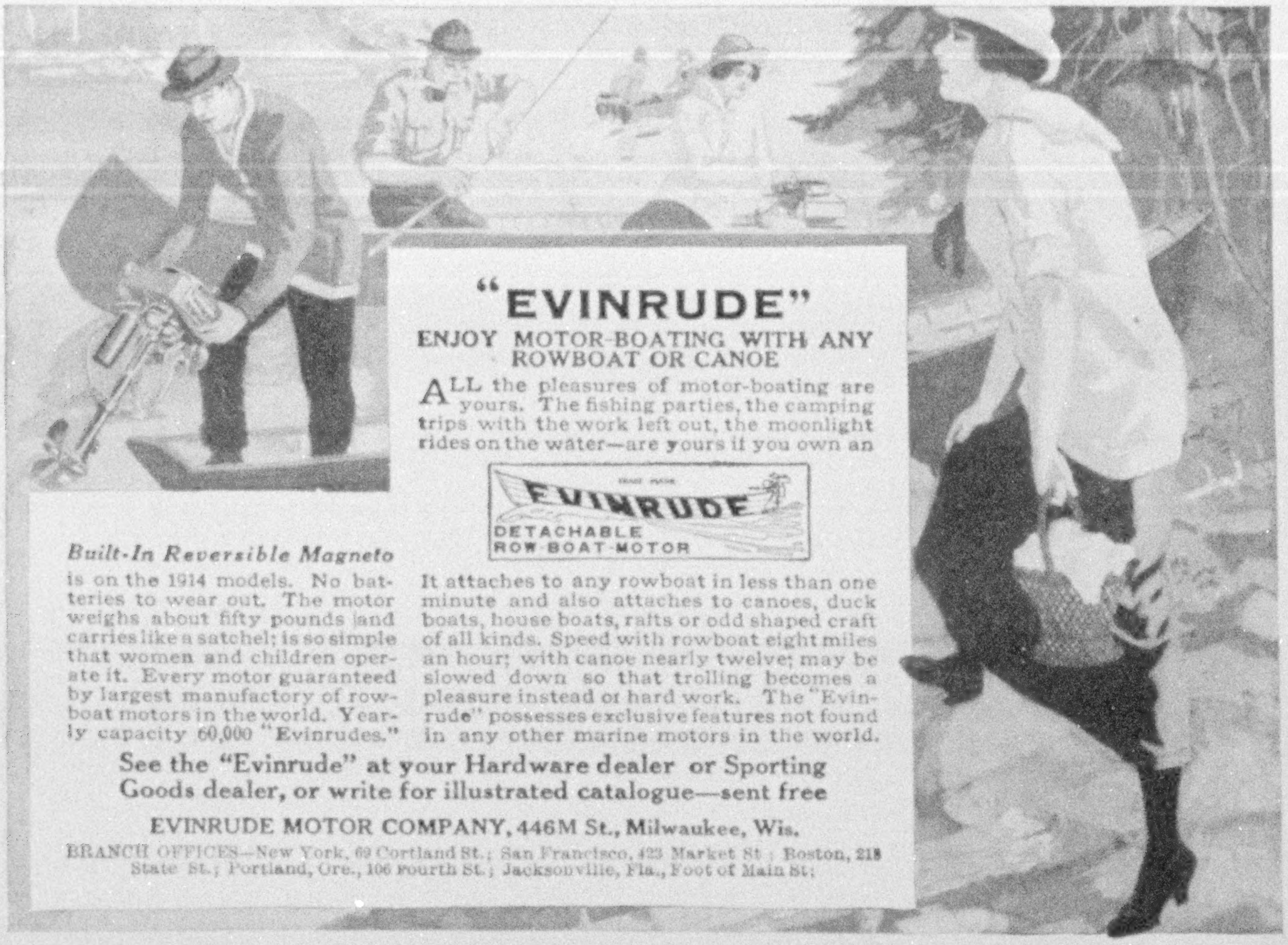

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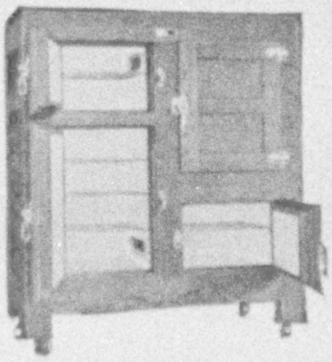

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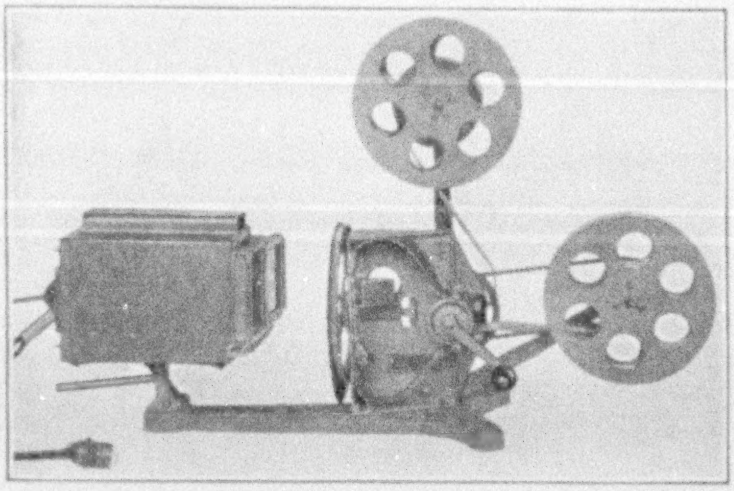

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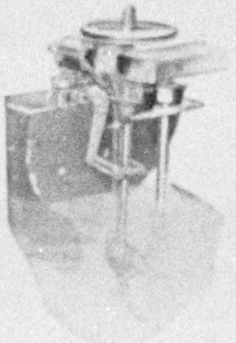

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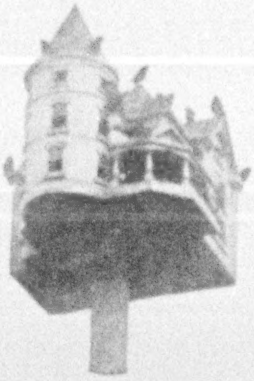

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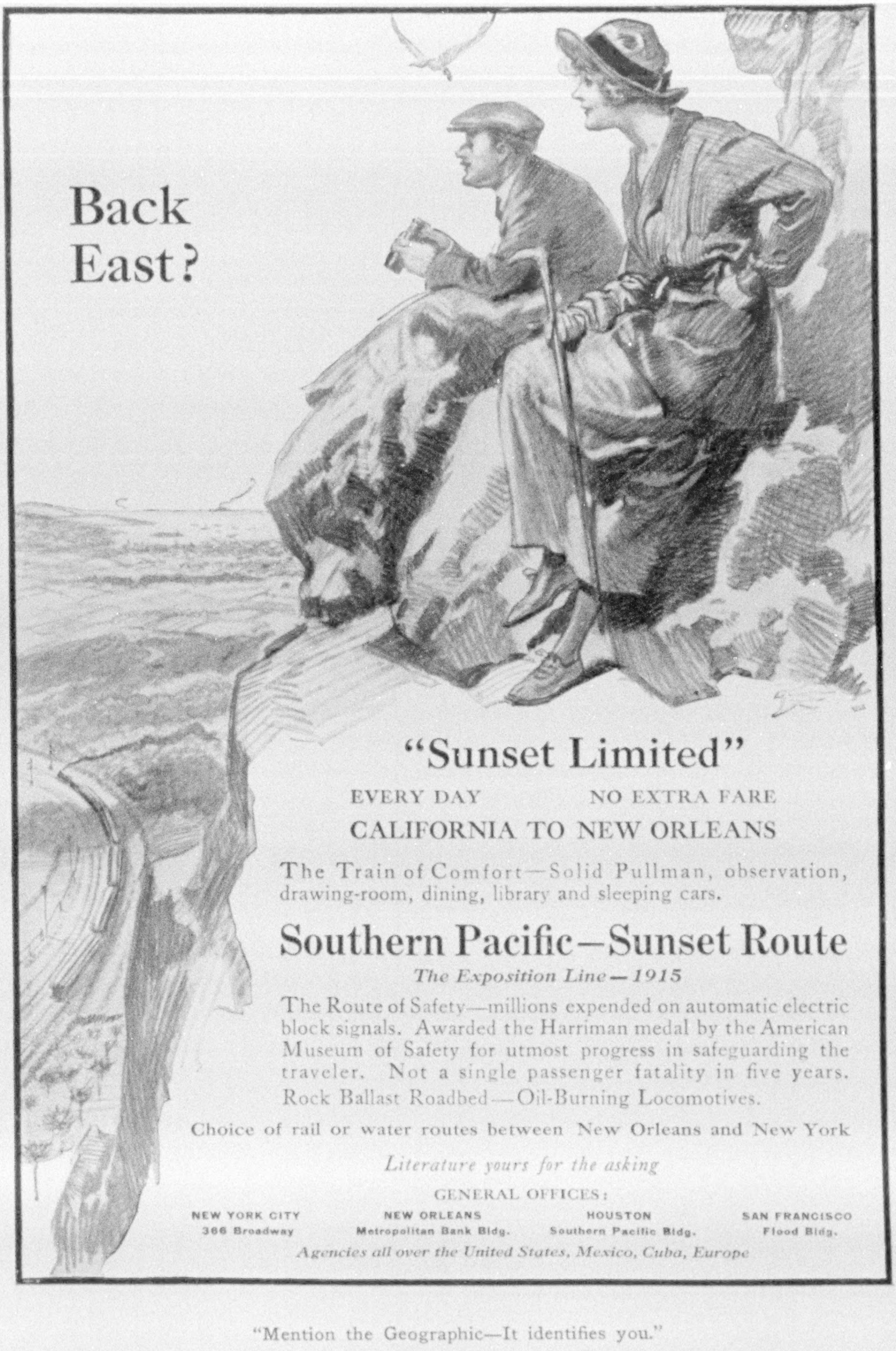

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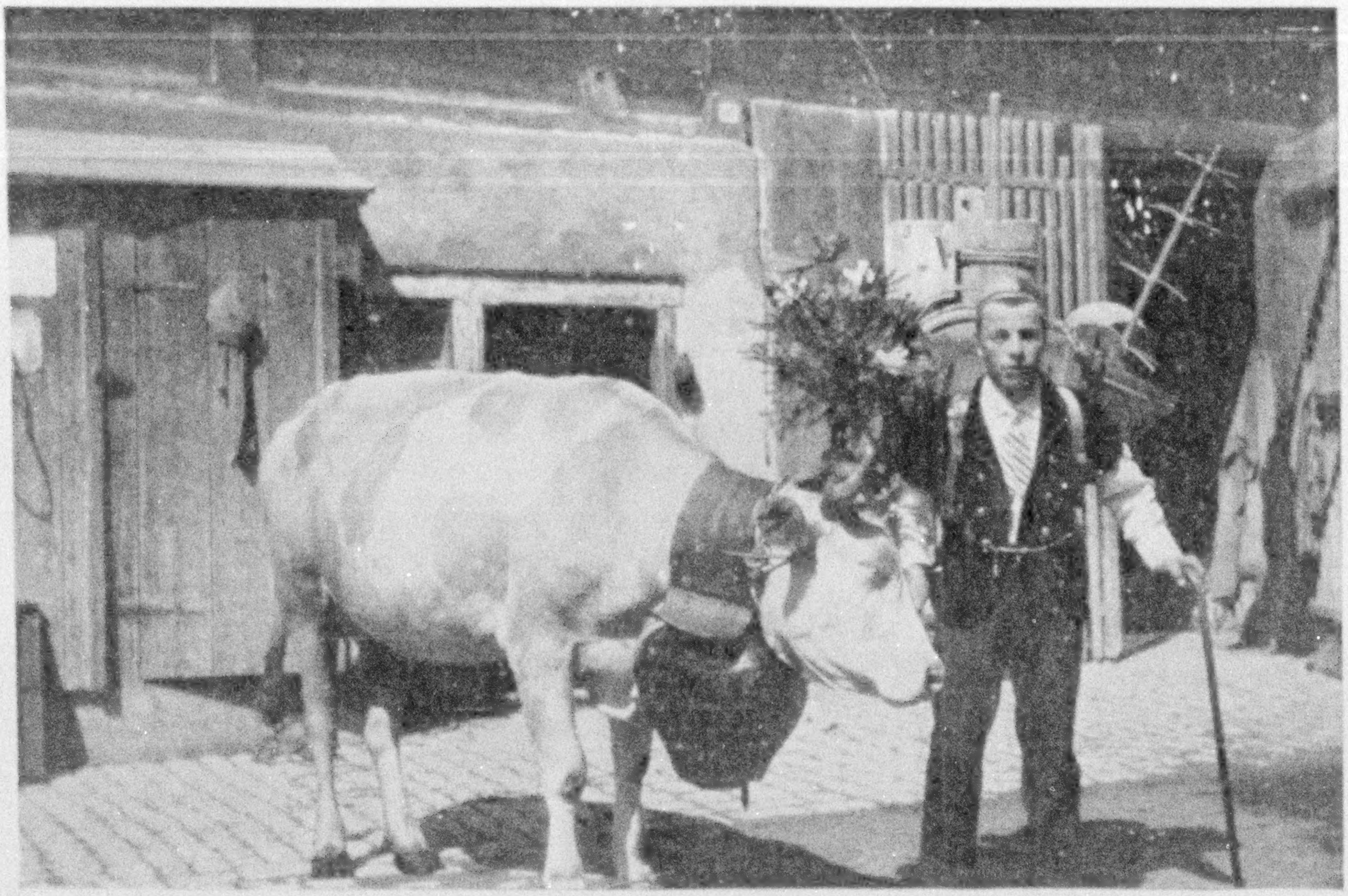

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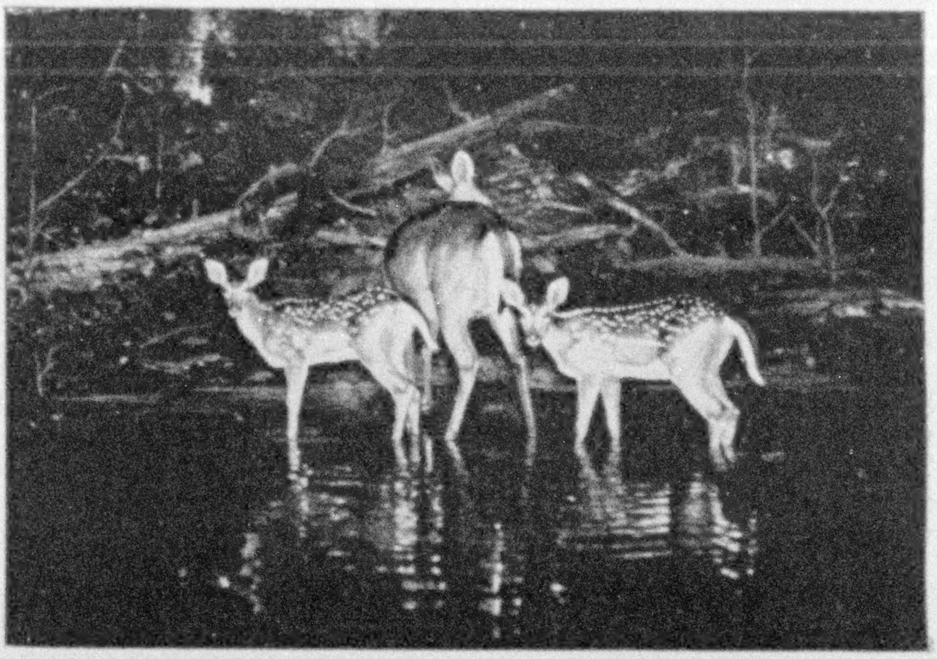

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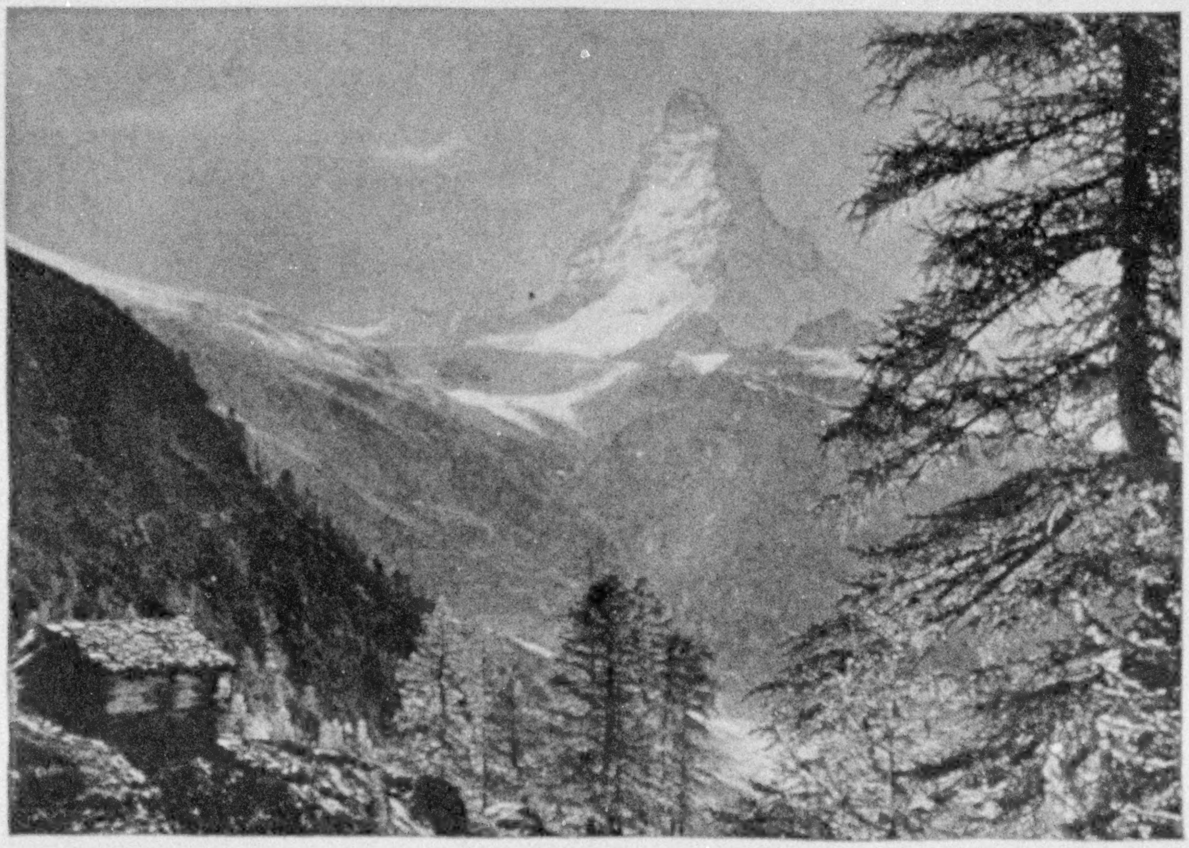

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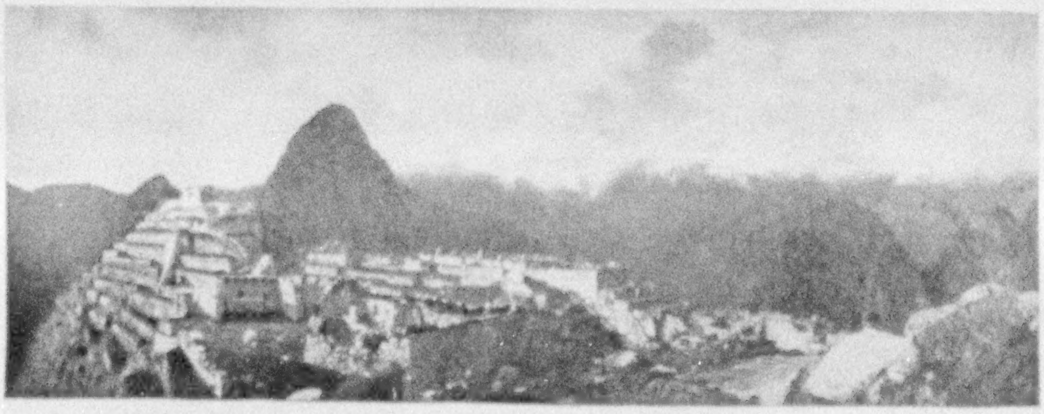

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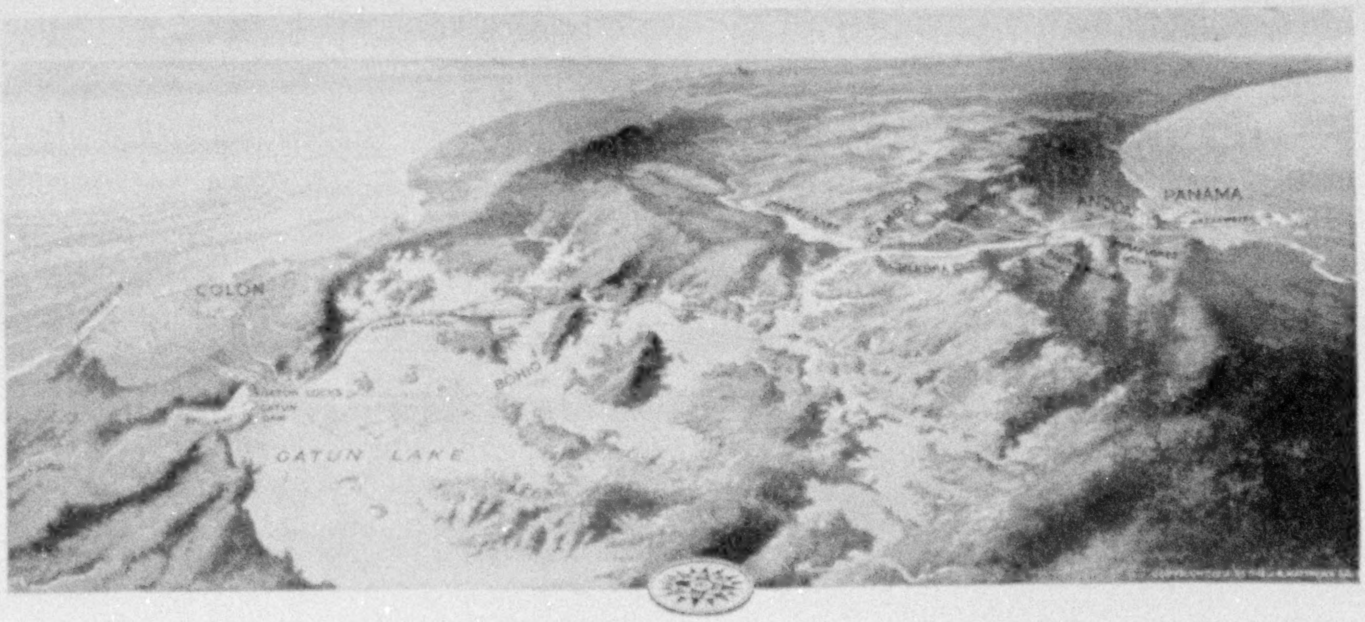

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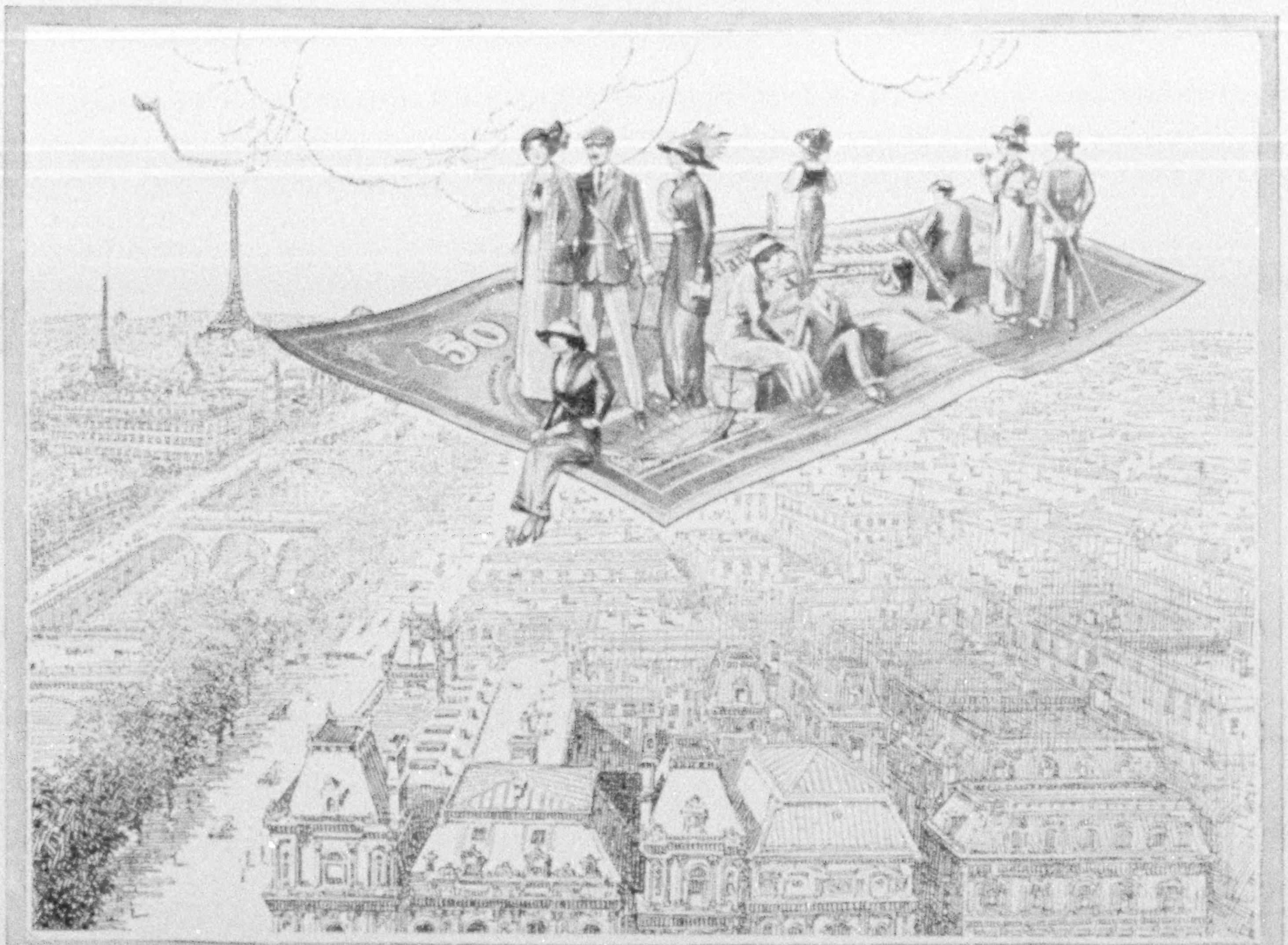

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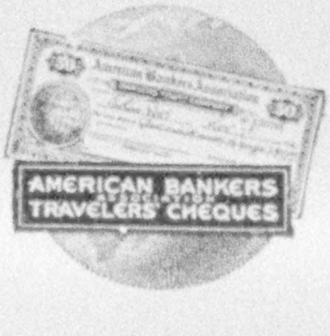
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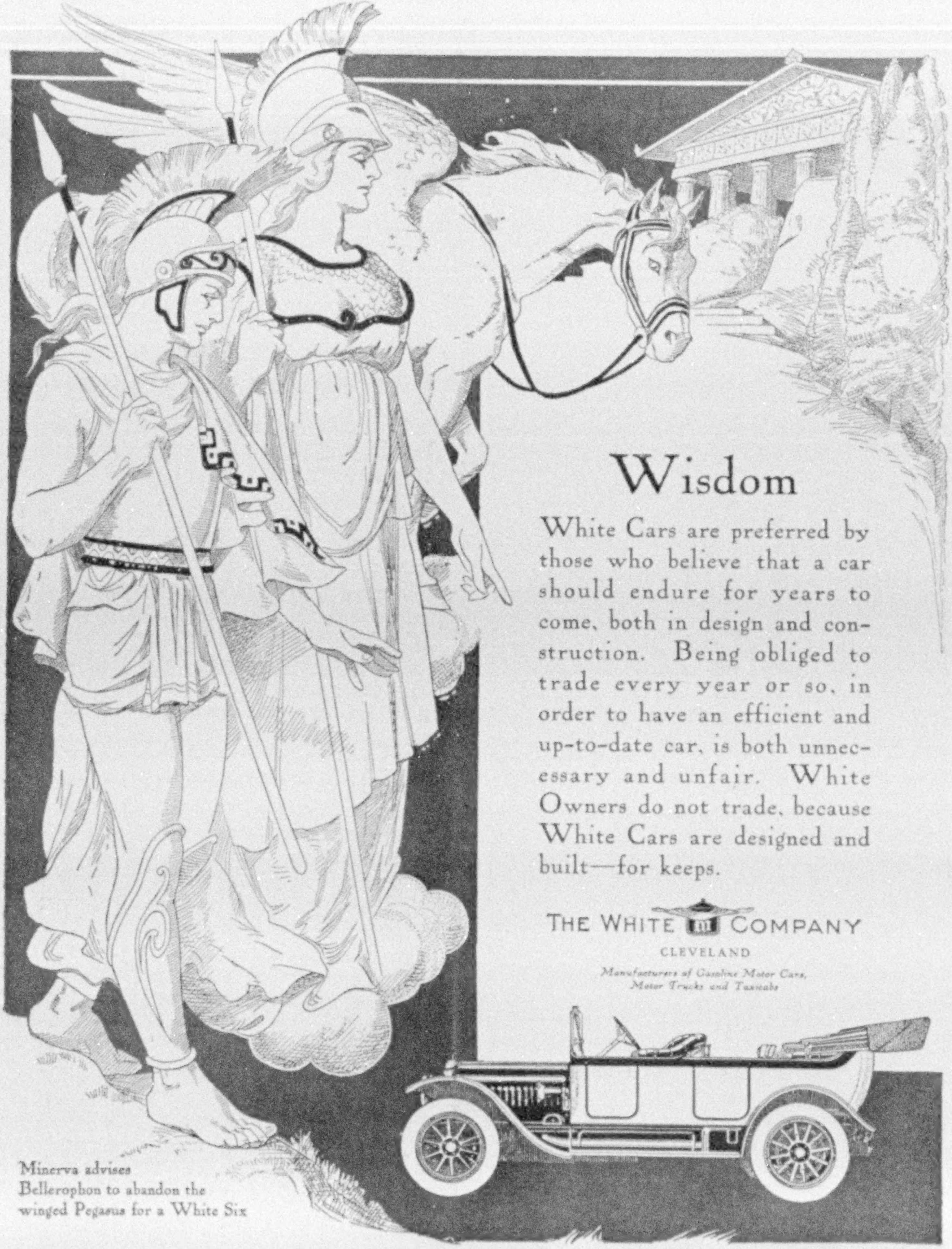

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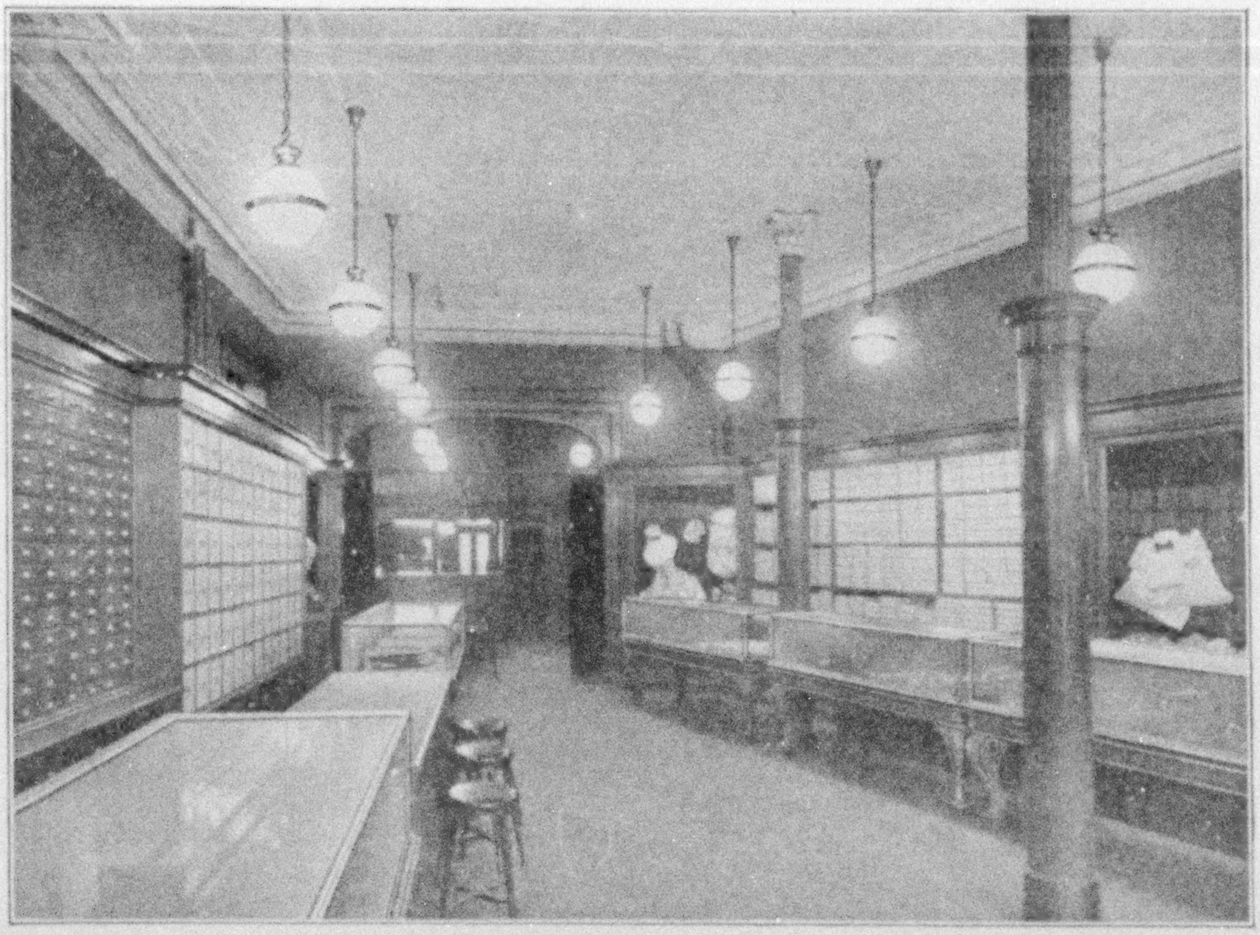
CLEVELAND
Manufacturers of Gasoline Motor Cars, Motor Trucks and Taxicabs



Where New York's cotillion leaders are outfitted. Broadway Store of Samuel Budd—good lighting is a necessity here. Alba Spheres and Tungsten lamps are used.

Proper lighting of fine merchandise

calls for ample, soft, colorless light. Do not kill values or spoil sales with dimness, harsh brilliancy, or black shadows. It costs no more to have just what you need —use Tungsten lamps and

Alba Shades, Globes, Bowls, Etc.

Tungsten lamps with Alba give a wonderful light; no glare, no dazzling reflections, no harsh shadows; a soft beautiful light of rare sales-inducing efficiency that usually decreases bills for current also.

Use Alba and increase your business. Your dealer has Alba or send his name. You cannot afford to be without the literature noted on the coupon. Fill it out at once.

Reg. U. S.
Pat. Off.

**Macbeth-Evans Glass
Company
Pittsburgh**

Sales and Showrooms also in New York
Chicago, Philadelphia, St Louis, Boston
Cincinnati, Cleveland, Dallas
San Francisco Macbeth-Evans
Glass Co Ltd Toronto

FOLD, TEAR OFF, MAIL

*Mark
with an X
the Booklet
which you wish*

For Booklet on Good Lighting: write for Book No. 60-V.

For Home Lighting: write for Portfolio No. 63-V.

For Business Lighting: write for Portfolio No. 47-V.

Name ....

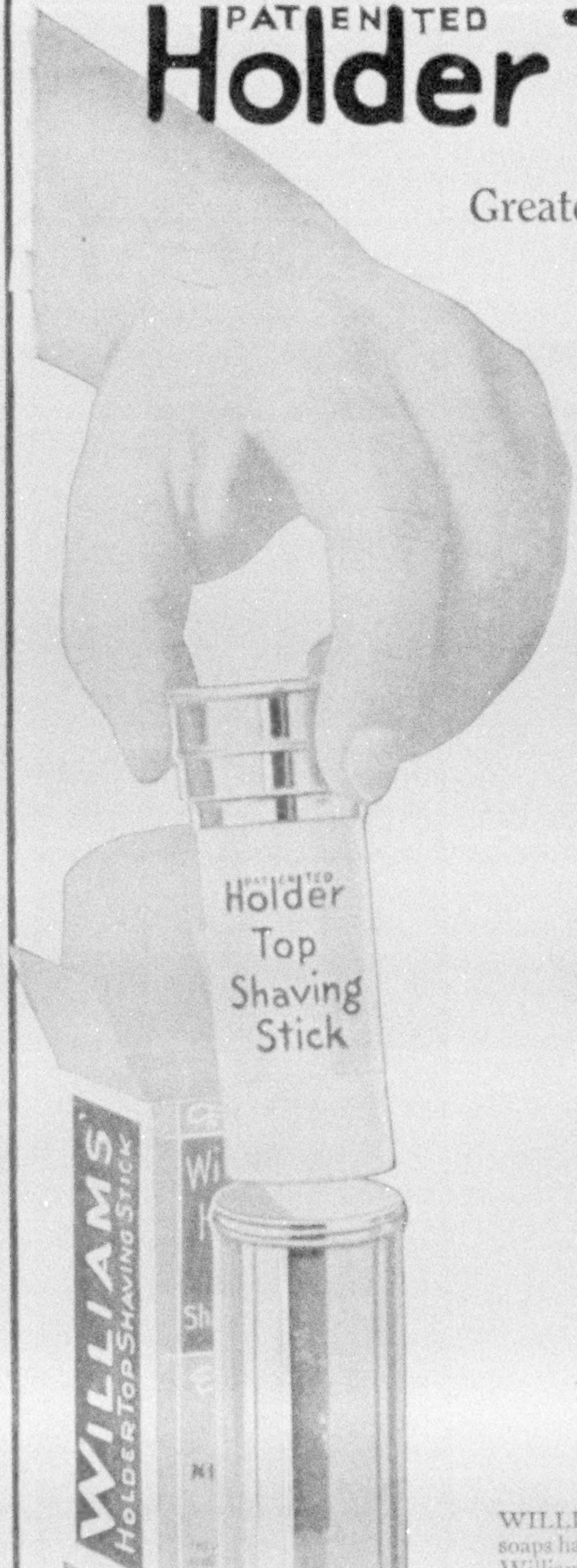
Street ....

City and State ....

Macbeth-Evans Glass Co., Pittsburgh

Williams'

PATENTED Holder Top Shaving Stick

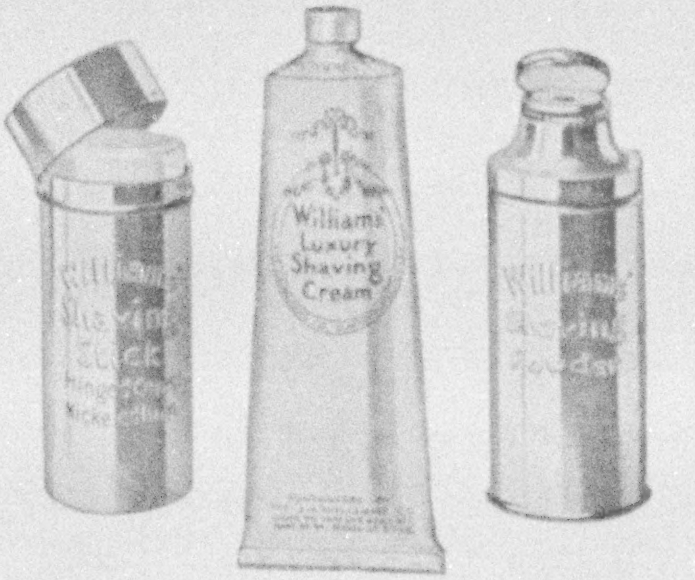

PATENTED
Holder
Top
Shaving
Stick
WILLIAMS'
HOLDER TOP SHAVING STICK

Greater Convenience—Greater Satisfaction

Your fingers do not touch the soap. You grasp it by the metal cap in which the stick is firmly fastened, rub it gently over the face, which has previously been moistened, and then return the Shaving Stick to its nickeled container.

The Holder-Top permits you to use the stick down to the last available bit with perfect ease and convenience.

THREE OTHER FORMS OF
THE SAME GOOD QUALITY


Williams' Shaving Stick Hinged-Cover Nickeled Box
Williams' Luxury Shaving Cream
Williams' Shaving Powder

Williams' Shaving Stick Hinged-Cover Nickeled Box
Williams' Shaving Powder Hinged-Cover Nickeled Box
Williams' Shaving Cream (in tubes)

A sample of any one of these four shaving preparations will be sent postpaid for 4 cents in stamps.

THE J. B. WILLIAMS COMPANY
Dept. A, Glastonbury, Conn.

WILLIAMS' JERSEY CREAM SOAP and our extensive line of *Toilet* soaps have the same softening, creamy, emollient qualities that have made Williams' *Shaving* Soaps so famous. Ask your dealer for them.

PRESS OF JUDD & DETWEILER, INC.